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DATE: July 11, 2001

TO: Alan Humphrey, U.S. EPA/ERTC Work Assignment Manager

THROUGH: Richard Henry, REAC Section Leader

FROM: Donald T. Bussey, REAC Task Leader for

SUBJECT: MONITOR WELL INSTALLATION AND GROUND WATER SAMPLING AND ANALYSIS
SAM WINER SITE, AKRON, OHIO
WORK ASSIGNMENT 0-177; TECHNICAL MEMORANDUM

INTRODUCTION

Background. The Sam Winer Property is located at 3530 East Waterloo Road in Akron, Ohio. The site geology is comprised of approximately 17-27 feet of overburden above a competent sandstone and shale bedrock. Elevated levels of volatile organic compounds (VOCs) and semi-VOCs had been detected through a previously conducted assessment by the United States Environmental Protection Agency (U.S. EPA), Region V. These contaminants were found to be located from a perched ground water zone within the overburden, and in overburden soil samples, from a central area of the site (in the vicinity of MW-1S and MW-1D, Figure 1). Most off-site residential and commercial bedrock wells are not impacted by these contaminants, but historically low levels of VOCs have been detected in ground water samples from a few distant bedrock wells (approximately one half mile southeast of the site).

Purpose and Scope. The scope of this project was to install an overburden/bedrock well pair within the previously identified on-site source area (at the MW-1S/1D well pair location, Figure 1), and an additional three bedrock monitor wells (MW-2D, MW-3D, and MW-4D, Figure 1) on the site's perimeter. Through sampling and analysis of overburden soil samples (collected at the four new well locations) and ground water samples (collected from the five newly installed monitor wells, and an additional existing bedrock well designated the Sam Winer well, Figure 1), personnel with the Response Engineering and Analytical Contract (REAC) have evaluated the site's soil and ground water chemistry. Additionally, based upon the site's bedrock ground water flow direction and ground water chemistry, REAC personnel have assessed the potential for the site's contaminants to migrate from the overburden (from the known source area) to the on-site bedrock aquifer, and whether contamination in the bedrock residential wells southeast of the site may be attributed to the on-site contaminant source.

SITE ACTIVITIES

Borehole Completion, Soil Sampling, and Monitor Well Installation. The five newly installed ground water monitor wells (MW-1S, MW-1D, MW-2D, MW-3D, and MW-4D, Figure 1) were completed with REAC oversight between November 20 and 22, 2000. The boreholes through the overburden were drilled employing conventional hollow stem auger methods. Soil samples were collected generally continuously (a two foot sample collected every two feet) at MW-1S, and standard sampling (a two foot sample collected every five feet) was conducted at MW-2D, MW-3D, and MW-4D. No soil samples were collected from the overburden while drilling MW-1D, as MW-1D is nested with MW-1S. Soil sample headspace flame-ionization detector (FID) screening was conducted for all soil samples collected. Results of the FID headspace screening are presented in Table 1. Based upon the results of the FID headspace screening samples were selected for analysis of VOCs and semi-VOCs. Samples selected for laboratory analysis are also indicated in Table 1.

Monitor well MW-1S was installed within the auger string and was completed as a two-inch inside-diameter Schedule 40 PVC monitor well. Non-native fill was noted in soil samples collected from the ground surface to 10 feet below ground surface (bgs). Glacial till was noted from 10 feet bgs to the bedrock interface at a depth of 27 feet bgs. A 20-foot length of 0.010-inch slotted PVC well screen was set from the top of bedrock at 27 feet bgs to 7 feet bgs. An appropriately sized sand-pack, and a bentonite seal and cement grout, was installed within the annular space between the PVC string and the borehole wall as the augers were backed out of the borehole.

For the four bedrock monitor wells (MW-1D, MW-2D, MW-3D, and MW-4D) the auger string, which had penetrated glacial till to the top of bedrock, was removed and five-inch inside diameter steel casings were set (cemented in place) approximately two feet into competent bedrock. Subsequent to the cementing of the steel surface casings the remainder of the bedrock boreholes were advanced to total depth using a 4 7/8-inch air drilling bit, and these wells were completed as open-hole bedrock wells. Total depth for the bedrock wells was targeted at 90 feet bgs, as this was the approximate depth of most of the nearby residential bedrock wells. Monitor wells MW-2D, MW-3D, and MW-4D were completed at a depth of 90 feet bgs. Monitor well MW-1D was completed to a depth of 117 feet bgs as no significant ground water contribution to the well was noted until that depth.

When REAC personnel traveled to the site to collect the first ground water samples (discussed below) it was found that at MW-1D and MW-4D the boreholes were blocked near the bedrock surface which prevented ground water samples from being collected. Apparently the five-inch steel casings were not set far enough into competent bedrock, and the rock (a shale) had swelled or sluffed in, blocking the boreholes. On January 3, 2001, REAC personnel returned to the site at which time the boreholes were cleared to total depth using air drilling methods. The two steel casings were extended at the ground surface and were driven an additional four to five feet into rock. After the casings were driven further into the rock, a second round of ground water sampling was conducted, with no problems encountered at either MW-1D or MW-4D.

The following summarizes the depth to bedrock, casing depth, and total completed depth of the four newly installed bedrock monitor wells:

Well Number	Top of Bedrock	Steel Casing Depth	Well Total Depth
MW-1D	27 feet bgs	33 feet bgs	117 feet bgs
MW-2D	27 feet bgs	33 feet bgs	90 feet bgs
MW-3D	27 feet bgs	30 feet bgs	90 feet bgs
MW-4D	17 feet bgs	29 feet bgs	90 feet bgs

Monitor Well Survey. Subsequent to the installation of the five newly installed monitor wells (but prior to the steel casings being re-set at MW-1D and MW-4D), a site survey was conducted by a licensed land surveyor. The survey included the west, north, and east property lines and the horizontal locations of all six on-site wells. Figure 1 illustrates these features. Also surveyed were the vertical ground surface and top of casing elevations for the six on-site wells. These top of casing elevations were used, in conjunction with depth to water measurements collected during the second round of ground water sampling (January 3, 2001), to calculate ground water elevations for each of the six wells. Survey data for the six wells are included in Table 2. Because the elevation of the top of the steel casings at MW-1D and MW-4D have changed, these two casings tops will need to be re-surveyed in order to calculate ground water elevations from depth to ground water measurements collected after January 3, 2001.

Ground Water Sampling. Two rounds of ground water sampling were completed by REAC personnel. The first round was conducted on December 19, 2000. Monitor wells sampled were MW-1S, MW-2D, MW-3D, and the Sam Winer well for VOCs and semi-VOCs. As discussed above, MW-1D and MW-4D could not be sampled during the first round of ground water sampling due to the obstructions in these wells. In addition, the container for the ground water sample collected from MW-1S for semi-VOCs broke during shipment, and this sample could not be analyzed. The second round of ground water sampling was conducted on January 4, 2001, subsequent to MW-1D and MW-4D being cleared. Monitor wells sampled during the second round included MW-1S, MW-1D, MW-2D, MW-3D, and MW-4D for VOCs

and semi-VOCs. The Sam Winer well was not sampled during the second round of ground water sampling. As acrolein and cyclohexanone were reported to have been detected in a distant bedrock residential well (located approximately one-half mile southeast of the Sam Winer site), the VOC list for the second round of sampling was expanded to include these two compounds.

During well sampling, depth to water measurements were also collected. These data were subsequently reduced to ground water elevation data for mapping the bedrock aquifer's potentiometric surface, and also to assess the vertical ground water potential between the overburden and the bedrock aquifers.

ANALYTICAL RESULTS

On-Site Overburden Soil Chemistry. The site's overburden consists primarily of glacial till which is present from the ground surface to the overburden/bedrock interface. The exception is at the MW-1S/MW-1D nested well pair location (Figure 1). At this location, in the area previously identified as an on-site source of VOCs and semi-VOCs, non-native fill material is present from the ground surface to a depth of approximately 10 feet bgs, with native till underlying the fill downward to the soil/bedrock interface. The fill material and the underlying till at the MW-1S/MW-1D location contained elevated concentrations of many VOC and semi-VOC compounds. Laboratory results are presented in the attached Laboratory Report, and summaries of detected concentrations of VOCs and semi-VOCs are presented as Tables 3 and 4, respectively. In general, at MW-1S/MW-1D, the concentrations of VOCs and semi-VOCs (and FID readings - Table 1) decreased dramatically with depth. VOC concentrations decreased an approximate order of magnitude from 4-6 feet bgs (within the fill), to 12-14 feet bgs (near the top of the till, beneath the fill), and decreased another one to two orders of magnitude from 12-14 feet bgs to 20-22 feet bgs (near the overburden/bedrock interface within the till). Concentrations of semi-VOCs were greater in the 12-14 feet bgs sample than the 4-6 feet bgs sample, but decreased to nearly non-detect at the 20-22 feet bgs depth. At the other three soil sampling locations (MW-2D, MW-3D, and MW-4D), only very low levels of detectable concentrations of VOCs are present, and no semi-VOCs were detected.

On-Site Overburden Ground Water Quality. Elevated concentrations of VOCs were detected in the MW-1S ground water sample collected during both ground water sampling rounds, and elevated concentrations of semi-VOCs were detected in the MW-1S ground water sample collected during the second round. Laboratory results are presented in the attached Laboratory Report, and summaries of detected concentrations of VOCs and semi-VOCs are presented as Tables 5 and 6, respectively.

On-Site Bedrock Aquifer. No detectable concentrations of VOCs or semi-VOCs were detected during either round of ground water sampling from any on-site bedrock well. This includes the four site perimeter bedrock wells (MW-2D, MW-3D, MW-4D, and the Sam Winer well), and MW-1D (nested with MW-1S installed beneath the area of elevated overburden VOC and semi-VOC contamination). Laboratory results are presented in the attached Laboratory Report, and summaries of detected concentrations of VOCs and semi-VOCs are presented as Tables 5 and 6, respectively.

On-Site Bedrock Aquifer Ground Water Flow Direction. Using vertical survey top of casing data and collected depth to ground water data obtained on January 3, 2001, potentiometric surface elevations have been calculated for the five on-site bedrock wells (MW-1D, MW2D, MW-3D, MW-4D, and the Sam Winer well). The water table elevation at MW-1S has also been calculated using the same data sets. These data have been summarized on Table 2. A potentiometric surface elevation contour map has also been prepared (Figure 2), which illustrates the flow direction in the bedrock aquifer beneath the site. The on-site ground water flow direction within the bedrock aquifer is approximately towards the east-southeast. Bedrock ground water passing through the MW-1S/MW-1D contamination location appears to flow directly towards MW-2D. The vertical potential for ground water flow at MW-1S/MW-1D is strongly downwards (94.16 feet elevation in the overburden and 81.70 feet elevation in the bedrock).

SUMMARY AND CONCLUSIONS

Non-native fill and glacial till beneath the fill at the MW-1S/MW-1D location (Figure 1) is impacted with elevated concentrations of VOCs and semi-VOCs (Tables 3 and 4). These concentrations decrease with increased depth. Also at this location, elevated concentrations of VOCs and semi-VOCs are present in the shallow ground water (Tables 5 and 6). Very low levels of VOCs are present within the overburden at the site's perimeter borings (MW-2D, MW-3D, and MW-4D, Figure 1 and Table 3). Semi-VOCs are not present within the overburden at the site's perimeter (Figure 1, Table 4). Ground water within the bedrock beneath the location of overburden contamination (at MW-1S/MW-1D, Figure 1) and at the site's perimeter (MW-2D, MW-3D, MW-4D, and the Sam Winer well, Figure 1) had no detectable concentrations of either VOCs (Table 5) or semi-VOCs (Table 6). Ground water flows towards the east-southeast. From the area of VOC and semi-VOC contaminated ground water (at MW-1S/MW-1D) bedrock ground water flow is towards MW-2D (Figure 2).

Based on the acquired data, on-site VOC and semi-VOC contaminated overburden and ground water is limited to the area around MW-1S/MW-1D. The bedrock well (MW-1D) at this location is contaminant-free, and although a significant downward vertical potential for ground water flow exists at this location, it appears that the on-site contamination has been limited to this area, probably due to the low hydraulic permeability of the native glacial till. As bedrock ground water at the site's perimeter is contaminant-free, including at MW-2D (directly hydraulically down-gradient of MW-1S/MW-1D), it appears that the "tightness" of the glacial till has limited the migration of VOCs and semi-VOCs from the shallow ground water and soil at MW-1S/MW-1D. Based upon the above, it is unlikely that contaminated ground water is migrating off-site.

ATTACHMENTS

Table 1	Results of Soil Sample Headspace FID Screening and Samples Selected for VOC and semi-VOC Analysis
Table 2	Vertical Survey, Depth to Ground Water, and Ground Water Elevation Data
Table 3	Summary of detected Concentrations of Volatile Organic Compounds in Soil
Table 4	Summary of detected Concentrations of Semi-Volatile Organic Compounds in Soil
Table 5	Summary of detected Concentrations of Volatile Organic Compounds in Ground Water
Table 6	Summary of detected Concentrations of Semi-Volatile Organic Compounds in Ground Water
Figure 1	Site Map
Figure 2	Potentiometric Surface Elevation Contour Map - January 3, 2001

Laboratory Analytical Report

cc: Central File WA 0-177

Tables

TABLE 1

Results of Soil Sample Headspace FID Screening and Samples Selected for VOC and Semi-Voc Analysis

Sam Winer Site
Akron, Ohio

July 2001

Boring Number	Sample Depth (feet below ground surface)	FID Reading (parts per million)	Analyzed for Volatile Organic Compounds?	Analyzed for Semi-Volatile Organic Compounds?
MW-1S	2-4	630	No	No
	4-6	> 1,000	Yes	Yes
	6-8	730	No	No
	8-10	> 1,000	No	No
	10-12	400	No	No
	12-14	> 1,000	Yes	Yes
	14-16	25	No	No
	16-18	23	No	No
	18-20	50	No	No
	20-22	6	Yes	Yes
	25-27	6	No	No
MW-2D	5-7	0	Yes	Yes
	10-12	0	No	No
	15-17	0	No	No
	20-22	0	Yes	Yes
MW-3D	5-7	0	Yes	Yes
	10-12	0	No	No
	15-17	0	No	No
	20-22	0	Yes	No
MW-4D	5-7	0	Yes	Yes
	10-12	0	No	No
	15-17	0	Yes	Yes

TABLE 2

Vertical Survey, Depth to Ground Water, and Ground Water Elevation Data

Sam Winer Site
Akron, Ohio

July 2001

Well Number	Ground Elevation (feet)	Top of Casing Elevation (feet)	Depth to Ground Water (feet bgs) (January 3, 2001)	Ground Water Elevation (feet) (January 3, 2001)
MW-1S	98.1	100.00	5.84	94.16
MW-1D	98.4	100.46 *	18.76	81.70
MW-2D	96.9	99.09	19.93	79.16
MW-3D	97.1	99.16	18.30	80.86
MW-4D	100.3	102.70 *	15.93	86.77
Sam Winer Well	100.5	101.04	17.56	83.48

Notes:

Elevation data is referenced to an arbitrary on-site datum of 100.00 feet (at the top of the PVC casing, MW-1S).
bgs - below ground surface.
* - these data have changed subsequent to re-setting the 5-inch steel casings at MW-1D and MW-4D.
Depth to water measurements obtained subsequent to January 3, 2001 must use re-surveyed corrected top of steel casing data.
Top of casing data for MW-1S is the top of the 2-inch PVC casing.
Top of casing data for all other on-site wells is the top of the steel casings.

TABLE 3

Summary of Detected Concentrations of Volatile Organic Compounds in Soil

Sam Winer Site
Akron, Ohio

July 2001

Volatile Organic Compound	MW-1S 4 to 6 feet bgs	MW-1S 12 to 14 feet bgs	MW-1S 20 to 22 feet bgs	MW-2D 5 to 7 feet bgs	MW-2D 20 to 22 feet bgs	MW-3D 5 to 7 feet bgs	MW-3D 5 to 7 feet bgs Dup.	MW-3D 20 to 22 feet bgs	MW-4D 5 to 7 feet bgs	MW-4D 15 to 17 feet bgs
Trichlorofluoromethane	1,300 U	120 U	1.2 U	1.3 U	1.1 U	1.1 U	1.1 U	**5.9**	1.1 U	1.2 U
Acetone	10,000 U	960 U	**13**	**86**	7.1 J	**19**	9.0 U	7.3 J	9.0 U	9.3 U
Methylene Chloride	**4,200**	**630**	**11**	1.3 U	**42**	1.1 U	1.1 U	**3.8**	1.1 U	1.2 U
1,1-Dichloroethane	1,300 U	120 U	1.2 U	1.3 U	**1.1**	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U
1,1,1-Trichloroethane	**33,000**	**2,800**	**12**	1.3 U	**11**	1.1 U	1.1 U	**8.7**	**1.2**	1.2 U
Trichloroethene	**26,000**	**2,100**	**12**	1.3 U	**11**	1.1 U	1.1 U	**5.5**	1.1 U	1.2 U
Toluene	**110,000**	**7,800**	**42**	1.3 U	**20**	1.1 U	1.1 U	**20**	**1.8**	1.2 U
Tetrachloroethene	**2,400**	**280**	**2.7**	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U
Ethylbenzene	**16,000**	**1,100**	**3.4**	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U
p&m-Xylene	**50,000**	**4,500**	**15**	1.3 U	**1.5**	1.1 U	1.1 U	**2.3**	1.1 U	1.2 U
o-Xylene	1,300 U	120 U	**4.9**	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U
1,4-Dichlorobenzene	**2,300**	**320**	1.2 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U
1,2-Dichlorobenzene	**20,000**	**2,700**	**7.1**	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U
1,2,4-Trichlorobenzene	1,300 U	**140**	1.2 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U

notes:

Data reported in micrograms per kilogram (ppb).
bgs - below ground surface.
U - compound not detected above the method detection limit.
J - estimated concentration below the method detection limit.

TABLE 4

Summary of Detected Concentrations of Semi-Volatile Organic Compounds in Soil

Sam Winer Site
Akron, Ohio

July 2001

Semi-Volatile Organic Compound	MW-1S 4 to 6 feet bgs	MW-1S 12 to 14 feet bgs	MW-1S 20 to 22 feet bgs	MW-2D 5 to 7 feet bgs	MW-2D 20 to 22 feet bgs	MW-3D 5 to 7 feet bgs	MW-3D 5 to 7 feet bgs Dup.	MW-4D 5 to 7 feet bgs	MW-4D 15 to 17 feet bgs
Phenol	4,300 U	**5,700**	1,800 U	2,100 U	1,900 U	2,000 U	1,900 U	1,900 U	2,000 U
1,3-Dichlorobenzene	4,300 U	1,100 J	1,800 U	2,100 U	1,900 U	2,000 U	1,900 U	1,900 U	2,000 U
1,4-Dichlorobenzene	4,300 U	**2,800**	1,800 U	2,100 U	1,900 U	2,000 U	1,900 U	1,900 U	2,000 U
Benzyl alcohol	4,300 U	**2,800**	1,800 U	2,100 U	1,900 U	2,000 U	1,900 U	1,900 U	2,000 U
1,2-Dichlorobenzene	**7,400**	**39,000**	1,800 U	2,100 U	1,900 U	2,000 U	1,900 U	1,900 U	2,000 U
4-Methylphenol	4,300 U	560 J	1,800 U	2,100 U	1,900 U	2,000 U	1,900 U	1,900 U	2,000 U
Isophorone	4,300 U	**3,600**	1,800 U	2,100 U	1,900 U	2,000 U	1,900 U	1,900 U	2,000 U
1,2,4-Trichlorobenzene	4,300 U	**2,200**	1,800 U	2,100 U	1,900 U	2,000 U	1,900 U	1,900 U	2,000 U
Naphthalene	4,300 U	990 J	1,800 U	2,100 U	1,900 U	2,000 U	1,900 U	1,900 U	2,000 U
2-Methylnaphthalene	4,300 U	1,000 J	1,800 U	2,100 U	1,900 U	2,000 U	1,900 U	1,900 U	2,000 U
N-Nitrosodiphenylamine	**460,000**	**1,600,000**	**3,800**	2,100 U	1,900 U	2,000 U	1,900 U	1,900 U	2,000 U
Phenanthrene	4,300 U	1,200 J	1,800 U	2,100 U	1,900 U	2,000 U	1,900 U	1,900 U	2,000 U
Di-n-butylpthalate	1,600 J	**4,900**	1,800 U	2,100 U	1,900 U	2,000 U	1,900 U	1,900 U	2,000 U
Bis(2-Ethylhexyl)phthalate	**550,000**	**1,500,000**	**5,300**	2,100 U	1,900 U	2,000 U	1,900 U	1,900 U	2,000 U

notes:

Data reported in micrograms per kilogram (ppb).
bgs - below ground surface.
U - compound not detected above the method detection limit.
J - estimated concentration below the method detection limit.

TABLE 5

Summary of Detected Concentrations of Volatile Organic Compounds in Ground Water

Sam Winer Site
Akron, Ohio

July 2001

Volatile Organic Compound	MW-1S		MW-1D		MW-2D			MW-3D		MW-4D	Sam Winer
	19-Dec-00	04-Jan-01	04-Jan-01	04-Jan-01 (Dup.)	19-Dec-00	19-Dec-00 (Dup.)	04-Jan-01	19-Dec-00	04-Jan-01	04-Jan-01	19-Dec-00
Vinyl Chloride	**140**	**380**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	**1,600**	**1,200**	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U
Methylene Chloride	**4,200**	**3,100**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	**1,200**	**1,000**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone	**1,300**	800 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
cis-1,2-Dichloroethene	**250**	200 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	**400**	**320**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	**5,800**	**7,200**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	**2,900**	**2,800**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-Pentanone	**380**	400 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Toluene	**13,000**	**16,000**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	**450**	**580**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
p&m-Xylene	**1,400**	**2,000**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	**390**	**460**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	**450**	**430**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

notes:

Data reported in microliters per liter (ppb).
U - compound not detected above the method detection limit.

TABLE 6

Summary of Detected Concentrations of Semi-Volatile Organic Compounds in Ground Water

Sam Winer Site
Akron, Ohio

July 2001

Semi-Volatile Organic Compound	MW-1S	MW-1D		MW-2D			MW-3D		MW-4D	Sam Winer
	04-Jan-01	04-Jan-01	04-Jan-01 (Dup.)	19-Dec-00	19-Dec-00 (Dup.)	04-Jan-01	19-Dec-00	04-Jan-01	04-Jan-01	19-Dec-00
Phenol	**1,400**	10 U	10 U	11 U	11 U	11 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	**19**	10 U	10 U	11 U	11 U	11 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	**52**	10 U	10 U	11 U	11 U	11 U	10 U	10 U	10 U	10 U
Benzyl alcohol	**280**	10 U	10 U	11 U	11 U	11 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	**690**	10 U	10 U	11 U	11 U	11 U	10 U	10 U	10 U	10 U
2-Methylphenol	**62**	10 U	10 U	11 U	11 U	11 U	10 U	10 U	10 U	10 U
4-Methylphenol	**210**	10 U	10 U	11 U	11 U	11 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	**15**	10 U	10 U	11 U	11 U	11 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	**12**	10 U	10 U	11 U	11 U	11 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	**12**	10 U	10 U	11 U	11 U	11 U	10 U	10 U	10 U	10 U
N-Nitrosodiphenylamine	**11,000**	10 U	10 U	11 U	11 U	11 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	**16**	10 U	10 U	11 U	11 U	11 U	10 U	10 U	10 U	10 U
Bis(2-Ethylhexyl)phthalate	**2,000** J	10 U	10 U	1.9 J	2.3 J	1.4 J	2.1 J	1.2 J	10 U	1.4 J

notes:

Data reported in microliters per liter (ppb).
U - compound not detected above the method detection limit.
J - estimated concentration below the method detection limit.

Figures

Missing Table #6

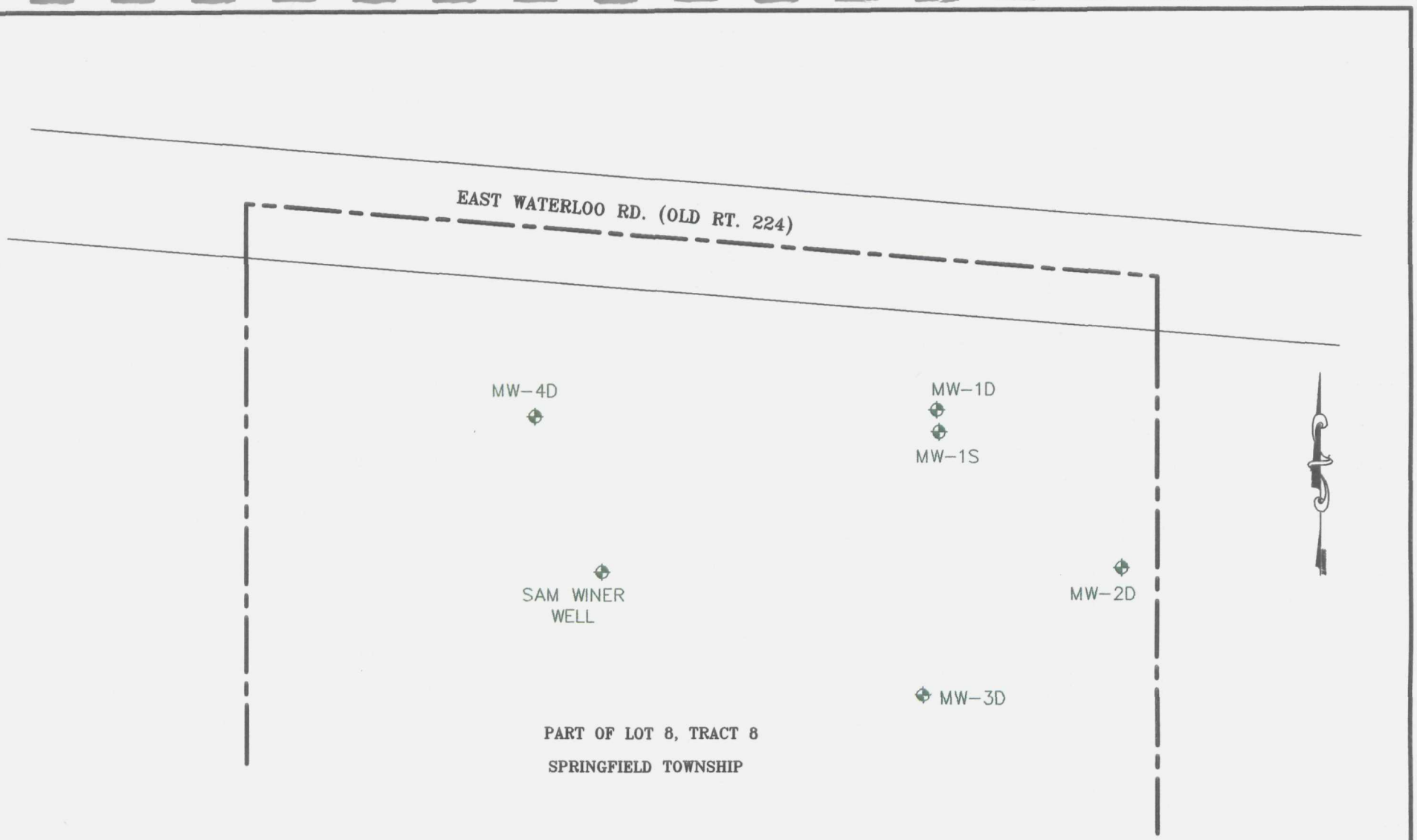
2D on 1/4 BPS should be [illegible]

3D on 1/4 " " " [illegible]

} Based upon Pg 02 in QA/QC manual in appendices

~~Storm Water well not mentioned in~~

Where is QA/QC discussion for Dec sampling?



LEGEND

MW-4D — MONITOR WELL

PROPERTY LINE

GRAPHIC SCALE

40 0 20 40 80 FEET

U.S. EPA ENVIRONMENTAL RESPONSE TEAM CENTER
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
68-C99-223
W.O.# R1A00177

FIGURE 1
SITE MAP
SAM WINER PROPERTY
AKRON, OHIO
JULY 2001

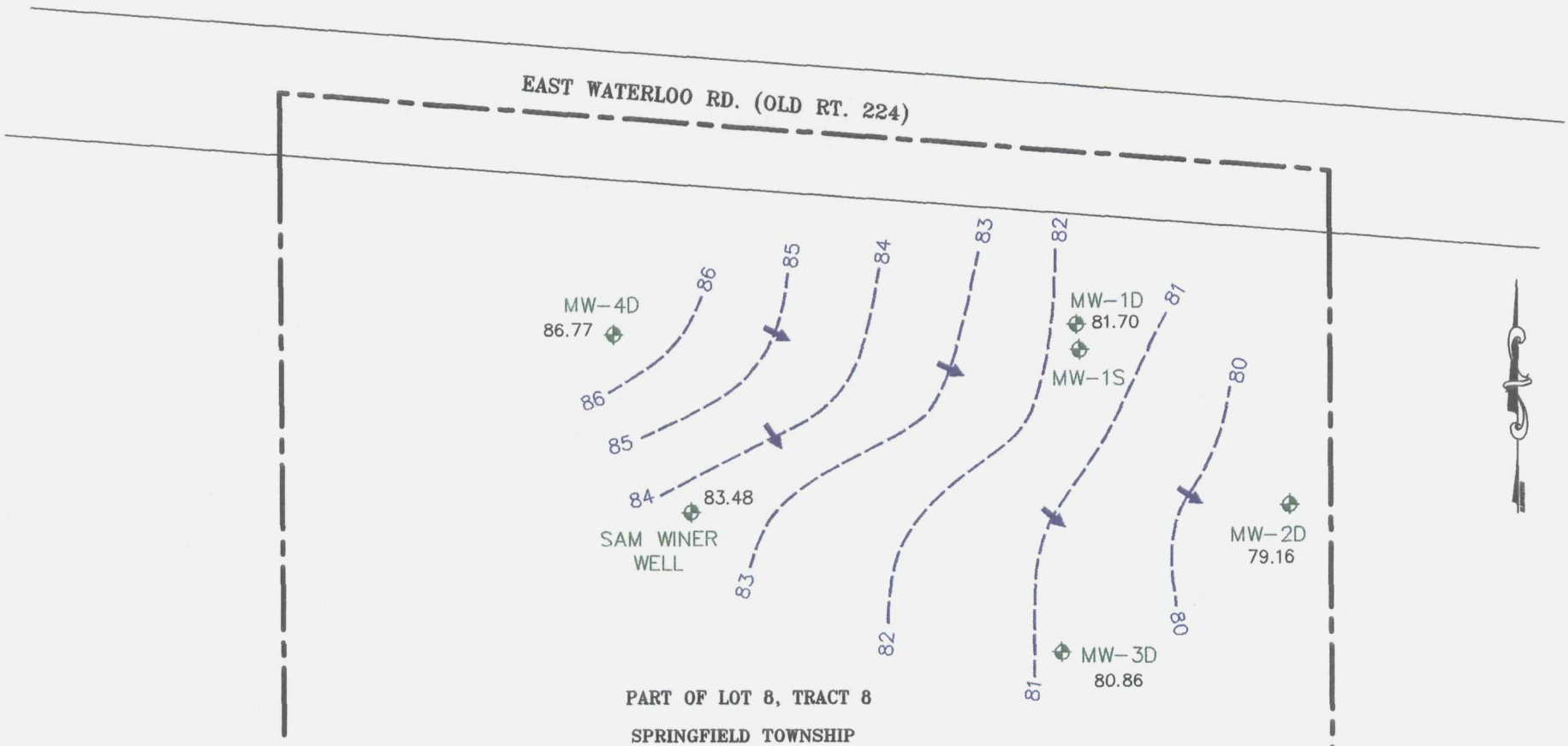
177/SITE_MAP.DWG 07/07/01

ask Vicki to bring hydro books - look up hydraulic gradient

$\frac{2}{20} = \frac{1}{10}$

NOTE:

ALL ELEVATION DATA REFERENCED TO AN ARBITRARY ON-SITE DATUM.



LEGEND

- MW-4D — MONITOR WELL
- 86.77 — GROUND WATER POTENTIOMETRIC SURFACE ELEVATION (FEET)
- 84 — GROUND WATER POTENTIOMETRIC SURFACE ELEVATION CONTOUR (FEET)
- GROUND WATER POTENTIOMETRIC SURFACE FLOW DIRECTION
- PROPERTY LINE

GRAPHIC SCALE

40 0 20 40 80 FEET

U.S. EPA ENVIRONMENTAL RESPONSE TEAM CENTER
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
68-C99-223
W.O.# R1A00177

FIGURE 2
POTENTIOMETRIC SURFACE ELEVATION CONTOUR MAP JANUARY 3, 2001
SAM WINER PROPERTY
AKRON, OHIO
JULY 2001

177/SITE_MAP.DWG 07/07/01

Appendices

ANALYTICAL REPORT

Prepared by
LOCKHEED MARTIN, Inc.

Sam Winer Site
Akron, OH

March 2001

EPA Work Assignment No. 0-177
LOCKHEED MARTIN Work Order R1A00177
EPA Contract No. 68-C99-223

Submitted to
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0177\DEL\AR\0201\REPORT

Table of Contents

Section III

Chains of Custody

Appendices will be furnished on request.

REAC in response to WA 0-177, provided analytical support for environmental samples collected from Sam Winer Site, located in Akron, OH as described in the following table. The support also included QA/QC, data review, and preparation of an analytical report containing a summary of the analytical methods, the results, and the QA/QC results.

The samples were treated with procedures consistent with those specified in SOP #1008.

COC #	Number of Samples	Sampling Date	Date Received	Matrix	Analysis	Laboratory	Data Package
19905	7	1/4/01	1/5/01	Ground Water	BNA	REAC	K023
	8				VOC + Acrolein Cyclohexanone		K021
19904	5	12/19/00	12/20/00	Ground Water	BNA	REAC	K013
	7				VOC		J562
05008	5	11/20/00	11/22/00	Soil	BNA	REAC	J518
	4	11/21/00	11/22/00				
	5	11/20/00	11/22/00		VOC		J503
	5	11/21/00	11/22/00				

For COC # 19904, for sample location MW - 2D, the VOC sample was labeled as sample #18472 but was listed in the COC as sample #18467; the semivolatile sample was labeled as 18467 and was listed in the COC as sample # 18472. In the following tables the VOC data will be reported as sample # 18467 and the semivolatile data as sample # 18472.

The data in this report have been validated to two significant figures. Any other representation of the data is the responsibility of the user.

BNA in Ground Water Package K 023

The method blank of 1/8/01 (WBLK010501) contained 3.1 µg/L bis(2-ethylhexyl) phthalate. The data are affected as follows:

The bis(2-ethylhexyl)phthalate concentration in samples 18480A, 18482A and 18484A should be regarded as not detected.

The bis(2-ethylhexyl)phthalate concentration in sample 18477A should be regarded as estimated.

The field blank (sample # 18482A) contained 1.4 µg/L bis(2-ethylhexyl) phthalate. The data are not affected.

In the continuing calibration check standard of 1/8/01and 1/11/01, acceptable QC limits for the percent difference were exceeded for bis(2-chloroisopropyl)ether (28% and 30 %). The data are not affected because this analyte was not detected in the associated samples.

The acceptable QC limits for one surrogate was exceeded for sample 18477A. The data are not affected.

For sample # 18477A; the acceptable QC limits for the internal standard areas were exceeded for 1,4-dichlorobenzene - d4(48%) and naphthalene - d8 (38 %). The following compounds quantitated by these internal standards should be considered as estimated in the sample:

1,4-dichlorobenzene - d 4	Naphthalene - d8
Phenol	Nitrobenzene
Bis(2-chloroethyl)ether	Isophorone
2-Chlorophenol	2-Nitrophenol
1,3-Dichlorobenzene	2,4-dimethylphenol
1,4-Dichlorobenzene	Bis (2-chloroethoxy)methane
1,2-Dichlorobenzene	2,4-dichlorophenol
Benzyl Alcohol	1,2,4-Trichlorobenzene
2-Methylphenol	Naphthalene
Bis (2-chloroisopropyl)ether	4-Chloroaniline
4-Methylphenol	Hexachlorobutadiene
N-nitroso-di-n-propylamine	4-Chloro-3-methylphenol
Hexachloroethane	2-Methylnaphtalene

For sample # 18477A (25 x diluted); the acceptable QC limits for the internal standard areas was exceeded for 1,4-dichlorobenzene - d5(45%). The results for phenol, benzyl alcohol, 1,2 - dichlorobenze and 4-methyl phenol should be considered as estimated in the sample.

BNA in Ground Water Package K 013

Sample 18470A was received broken. No results are available for this sample.

In the continuing calibration check standard of 12/27/00, the acceptable QC limits for the percent difference were exceeded for bis(2-chloroisopropyl)ether (33%). The data are not affected because this analyte was not detected in the associated samples.

For sample # 18472A; the surrogate percent recovery QC limits were exceeded for 2-fluorophenol (17 %), nitrobenzene - d5 (28 %) and 2-fluorobiphenyl (21 %). All the base neutral results should be considered as estimated in the associated sample.

The acceptable QC limits for the 2-fluorobiphenyl surrogate standard per cent recovery was exceeded for sample 18473A (38 %) and sample 18474A (41%). The data are not affected.

BNA in Soil Package J 518

In the continuing calibration check standard of 11/29/00, the acceptable QC limits for the percent difference were exceeded for 2,4-dinitrophenol (25.3%). The data are not affected because this analyte was not detected in the associated samples.

VOC in Ground Water Package J 562

The trip blank, sample # 18466, contained chloroform (7.1 ug/L) and bromodichloromethane (3.6 ug/L). The data are not affected as these compounds were not detected in the associated samples.

The field blank, sample # 18463, contained toluene at 2.7 ug/L. The data are not affected as the compound in the associated samples were either not detected or were greater than five times the field blank concentration.

In the continuing calibration check standard of 12/20/00, the acceptable QC limits for the percent difference were exceeded for vinyl chloride (29%), trichlorofluoromethane (28 %) and acetone (29 %). The data are not affected because the compounds were not detected in the associated samples.

In the continuing calibration check standard of 12/21/00, the acceptable QC limits for the percent difference were exceeded for vinyl chloride (29%), bromomethane (29 %) and trichlorofluoromethane (37 %). The results for vinyl chloride should be considered as estimated for sample 18464.

VOC in Ground Water Package K 021

Although no response factor, %RSD and %D criteria exist for cyclohexanone or acrolein, professional judgement was used in qualifying the compounds.

The method blank (1/05/01) contained dichlorodifluoromethane at 3.9 ug/L. The data are not affected as this compound was not detected in the associated samples.

The method blank (1/09/01) contained acetone at 6.6 ug/L. The data are not affected as this compound was not detected in the associated samples.

The trip blank, sample # 18478, contained acetone at 4.6 ug/L. The data are not affected as this compound in the associated samples was either not detected or was greater than five times the method blank concentration.

0177\DEL\AR\0201\REPORT

In the initial calibration of 1/04/01, the acceptable QC limits were exceeded for the average response factor of cyclohexanone (0.007). The cyclohexanone results should be considered as estimated for samples 18478, 18481, 18479, 18483, 18487, 18489, 18485 and 18476.

In the continuing calibration of 1/05/01, the acceptable QC limits were exceeded for the average response factor of cyclohexanone (0.0022). The cyclohexanone results should be considered as estimated for samples 18478, 18481, 18479, 18483, 18487, 18489, 18485 and 18476.

In the initial calibration of 1/09/01(Instrument B); the acceptable QC limits for the percent relative deviation (RSD) was exceeded for 1,2-dibromo-3-chloropropane (34%). The data are not affected because the compound was not detected in the associated samples.

In the initial calibration of 1/05/01 (Instrument A); the acceptable QC limits for the percent relative deviation (RSD) was exceeded for dichlorodifluoromethane (53 %), 1,2,4-trichlorobenzene (39 %) and naphthalene (36%). The results for dichlorodifluoromethane should be considered as estimated for samples 18478, 18481, 18489 and 18476.

In the initial calibration of 1/04/01 (Instrument A); the acceptable QC limits for the percent relative deviation (RSD) was exceeded for cyclohexanone (61 %). The results for cyclohexanone should be considered as estimated for samples 18478, 18479, 18481,18483, 18485, 18487, 18489 and 18476.

In the continuing calibration of 1/10/01 (Instrument B); the acceptable QC limits for the percent difference (%D) was exceeded for vinyl chloride (46%), chloroethane (28 %) and 1,1-dichloroethane (26 %). The data are not affected because only QC samples were analyzed with this calibration check.

In the continuing calibration of 1/05/01 (Instrument A): the acceptable QC limits for the percent difference (%D) was exceeded for cyclohexanone (69 %). The results for cyclohexanone should be considered as estimated for samples 18478, 18479, 18481,18483, 18485, 18487, 18489 and 18476.

The percent recovery acceptable QC limits was exceeded for one surrogate for samples 18489 and 18476; all results should be considered as estimated for these samples.

VOC in Soil Package J 503

For the continuing calibration of 11/22/00: the acceptable QC limits for the percent difference (%D) were exceeded for vinyl chloride (32 %). The data are not affected as the compound was not detected in the associated samples.

For the continuing calibration of 11/27/00: the acceptable QC limits for the percent difference (%D) were exceeded for trichlorofluoromethane (35 %) and acetone (47 %). The results should be considered as estimated for these compounds in sample 18443.

The per cent recovery acceptable QC limits was exceeded for one surrogate standard in sample 18443. All results should be considered as estimated for sample 18443.

The internal standard areas acceptable QC limits were exceeded for three internal standards in sample 18445. All results should be considered as estimated for sample 18445. For sample 18443 one internal standard exceeded the acceptable QC limits. The following compounds are considered estimated:
4-Methyl-2-Pentanone, Toluene, 2-Hexanone, Tetrachloroethene, Chlorobenzene, 1,1,1,2-Tetrachloroethane, Ethylbenzene ,p&m-Xylene, o-Xylene. Styrene, Isopropylbenzene, 1,1,2,2-Tetrachloroethane, 1,2,3-Trichloropropane, n-Propylbenzene, Bromobenzene, 1,3,5-Trimethylbenzene, 2-Chlorotoluene, 4-Chlorotoluene, tert-Butylbenzene, 1,2,4-Trimethylbenzene, sec-Butylbenzene, p-Isopropyltoluene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, n-Butylbenzene,

Trimethylbenzene, sec-Butylbenzene, p-Isopropyltoluene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, n-Butylbenzene, 1,2-Dichlorobenzene, 1,2-Dibromo-3-chloropropane, 1,2,4-Trichlorobenzene,Hexachlorobutadiene, Naphthalene, 1,2,3-Dichlorobenzene.

Summary of Abbreviations

AA	Atomic Absorption
B	The analyte was found in the blank
BFB	Bromofluorobenzene
C	Centigrade
cont.	Continued
D	(Surrogate Table) this value is from a diluted sample and was not calculated (Result Table) this result was obtained from a diluted sample
Dioxin	denotes Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans and/or PCDD and PCDF
CLP	Contract Laboratory Protocol
COC	Chain of Custody
CONC	Concentration
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
DFTPP	Decafluorotriphenylphosphine
DL	Detection Limit
E	The value is greater than the highest linear standard and is estimated
EMPC	Estimated maximum possible concentration
ICAP	Inductively Coupled Argon Plasma
ISTD	Internal Standard
J	The value is below the method detection limit and is estimated
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MDL	Method Detection Limit
MI	Matrix Interference
MS (BS)	Matrix Spike (Blank Spike)
MSD (BSD	Matrix Spike Duplicate (Blank Spike Duplicate)
MW	Molecular Weight
NA	either Not Applicable or Not Available
NC	Not Calculated
NR	Not Requested
NS	Not Spiked
% D	Percent Difference
% REC	Percent Recovery
PPB	Parts per billion
PPBV	Parts per billion by volume
PPMV	Parts per million by volume
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
QL	Quantitation Limit
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SIM	Selected Ion Monitoring
TCLP	Toxic Characteristics Leaching Procedure
U	Denotes not detected
W	Weathered analyte; the results should be regarded as estimated

m^3	cubic meter	kg	kilogram	μg	microgram
L	liter	g	gram	pg	picogram
mL	milliliter	mg	milligram	ng	nanogram
μL	microliter				

*	denotes a value that exceeds the acceptable QC limit
	Abbreviations that are specific to a particular table are explained in footnotes on that table

Revision 2/15/00

Analytical Procedure for VOC in Water

A modified 524.2 method for the analysis of Volatile Organic Compounds in water was used. Samples were purged, trapped, and desorbed to a GC/MS system. Prior to purging, the samples were spiked with a three component surrogate mixture consisting of toluene-d_8, 4-bromofluorobenzene and 1,2-dichloroethane-d_4 and a three component internal standard mixture consisting of bromochloromethane, 1,4-difluorobenzene, and chlorobenzene-d_5.

The purge and trap unit consisted of: A Tekmar concentrator (3000 series) equipped with an Archon autosampler (Dynateck Corp.) and a VOCARB 3000 trap (Supelco).

The purge and trap instrument conditions were:

Purge	10 min at 25° C
Dry Purge	2 min at ambient temperature
Desorb Preheat	245° C
Desorb	4 min at 230° C
Purge Flow Rate	40 mL/min
Bake	10 min at 260° C

A Hewlett Packard 5973 GC/MSD equipped with an HP Chem Station data system was used to analyze the data.

The instrument conditions were:

Column:	30 meter x 0.25 mm ID, RTx-Volatiles (Restek Corp.) column with 3.0 µm film thickness.
Temperature:	4 min at 40° C 9° C/min to 165° C, hold for 2 min. 12° C/min to 220° C, hold for 7 min.
Flow Rate	Helium at 1.0 mL/min.
Mass Spectrometer:	Electron Impact Ionization at a nominal electron energy of 70 electron volts, scanning from 35-350 amu at one scan/sec.

Computer: Preprogrammed to plot Extracted Ion Current Profile (EICP); capable of integrating ions and plotting abundances vs time or scan number. A library search (NIST/EPA/NIH) for tentatively identified compounds was performed on samples.

The GC/MS system was calibrated using 6 VOC standards, with the exception of acetone, at 5, 20, 50, 100, 150, and 200 µg/L; acetone was calibrated with 5 standards at 20, 50, 100, 150, and 200 µg/L. Before analysis each day, the system was tuned with 50-ng BFB and passed a continuing calibration check when analyzing a 50 µg/L standard mixture in which the responses were evaluated by comparison to the average response of the calibration curve.

The results are in Table 1.1; the tentatively identified compounds are listed in Table 1.2. The concentrations of the analytes were calculated using the following equation:

$$C_u = \frac{A_x \times I_{is} \times D}{A_{is} \times RF \text{ (or } RF_{ave})}$$

where

C_u	= Concentration of target analyte (µg/L)
A_x	= Area of the target analyte
I_{is}	= Concentration of specific internal standard (µg/L)
A_{is}	= Area of the specific internal standard
RF	= Response Factor
RF_{ave}	= Average Response Factor
D	= Dilution factor

The average Response Factor is used when a sample is associated with an initial calibration curve. The Response Factor is used when a sample is associated with a continuing calibration curve.

Response Factor calculation:

The response factor (RF) for each specific analyte is quantitated based on the area response from the continuing calibration check as follows:

$$RF = \frac{A_c \times I_{is}}{A_{is} \times I_c}$$

where,

RF	= Response factor for a specific analyte
A_c	= Area of the analyte in the standard
I_{is}	= Concentration of the specific internal standard
A_{is}	= Area of the specific internal standard
I_c	= Concentration of the analyte in the standard

$$RF_{ave} = \frac{RF_1 + \ldots + RF_n}{n}$$

and

n = number of Samples

Revision of 8/23/00

Analytical Procedure for VOC in Soil

A modified 524.2 method was used for the analysis of Volatile Organic Compounds in soil. Samples were purged, trapped, and desorbed to a GC/MS system. Prior to purging, the samples were spiked with a three component surrogate mixture consisting of toluene-d_8, 4-bromofluorobenzene and 1,2-dichloroethane-d_4 and a three component internal standard mixture consisting of bromochloromethane, 1,4-difluorobenzene, and chlorobenzene-d_5. The following conditions and parameters were utilized:

The purge and trap unit consisted of: A Tekmar concentrator (3000 series) equipped with an Archon autosampler (Dynateck Corp.) and a VOCARB 3000 trap (Supelco).
The purge and trap instrument conditions were:

Purge	10 min at 25° C
Dry Purge	2 min at 25° C
Desorb Preheat	245° C
Desorb	4 min at 230° C
Purge Flow Rate	40 mL/min
Bake	10 min at 260° C

A Hewlett Packard 5973 GC/MSD equipped with an HP Chem Station data system was used to analyze the data.

The instrument conditions were:

Column:	30 meter x 0.25 mm ID, RTx-Volatiles (Restek Corp.) column with 3.0 µm film thickness.
Temperature:	4 min at 40° C 9° C/min to 165° C, hold for 2 min. 12° C/min to 220° C, hold for 7 min.
Flow Rate	Helium at 1.0 mL/min.
GC/MS Interface	Capillary direct with 1 mL/min helium carrier gas at 250° C.
Mass Spectrometer:	Electron Impact Ionization at a nominal electron energy of 70 electron volts, scanning from 35-300 amu at one scan/sec.

Computer: Preprogrammed to plot Extracted Ion Current Profile (EICP); capable of integrating ions and plotting abundances vs time or scan number. A library search (NBS-Wiley) for tentatively identified compounds was performed on samples.

The GC/MS system was calibrated using 6 VOC standards, with the exception of acetone, at 5, 20, 50, 100, 150, and 200 µg/L; acetone was calibrated with 5 standards at 20, 50, 100, 150, and 200 µg/L. Before analysis each day, the system was tuned with 50-ng BFB and passed a continuing calibration check when analyzing a 50 µg/L standard mixture in which the responses were evaluated by comparison to the average response of the calibration curve.

The results are in Table 1.3; the tentatively identified compounds are listed in Table 1.4

The concentrations of the analytes analyzed by the low level method of 5.0 g soil in 5.0 mL of water were calculated using the following equation:

$$C_u = \frac{A_x \times I_{is}}{A_{is} \times RF \text{ (or } RF_{ave}) \times D}$$

where:
- C_u = Concentration of target analyte (µg/kg) on a dry weight basis if D is used
- A_x = Area of the target analyte
- I_{is} = Concentration of specific internal standard in the volume purged (ug/L)
- A_{is} = Area of the specific internal standard
- RF = Response Factor
- RF_{ave} = average Response Factor
- D = Decimal percent solids

The concentrations of the analytes analyzed by the medium level method of extracting 5.0 g soil with 5 mL methanol and diluting an aliquot with 5.0 mL prior to analysis, were calculated using the following equation:

$$C_u = \frac{A_x \times I_{is} \times 5.0 \text{ (Nominal Method Mass)}}{A_{is} \times RF \text{ (or } RF_{ave}) \times W_s \times D}$$

where:
- C_u = Concentration of target analyte (µg/kg) on a dry weight basis if D is used
- A_x = Area of the target analyte
- I_{is} = Concentration of specific internal standard in the volume purged (ug/L)
- A_{is} = Area of the specific internal standard
- RF = Response Factor
- RF_{ave} = average Response Factor
- W_s = Mass of sample (g) purged
- D = Decimal percent solids

The average Response Factor is used when a sample is associated with an initial calibration curve. The Response Factor is used when a sample is associated with a continuing calibration curve. Response Factor calculation:

The response factor (RF) for each specific analyte quantitated is based on the area response from the continuing calibration check as follows:

$$RF = \frac{A_c \times I_{is}}{A_{is} \times I_c}$$

where,
- RF = Response factor for a specific analyte
- A_c = Area of the analyte in the standard
- I_{is} = Concentration of the specific internal standard
- A_{is} = Area of the specific internal standard
- I_c = Concentration of the analyte in the standard

$$RF_{ave} = \frac{RF_1 + \ldots + RF_n}{n}$$ and n = number of Standards

Extraction Procedure

Prior to extraction, each sample was spiked with a six component surrogate mixture consisting of nitrobenzene-d_5, 2-fluorobiphenyl, terphenyl-d_{14}, phenol-d_5, 2-fluorophenol, and 2,4,6-tribromophenol. One liter of sample was extracted according to Method 625, Section 10, as outlined in the Federal Register Vol. 49, #209, Friday, Oct. 26, 1984. The extracts were combined, concentrated to 1.0 ml, an internal standard mixture consisting of 1,4-dichlorobenzene-d_4, naphthalene-d_8, acenaphthene-d_{10}, phenanthrene-d_{10}, chrysene-d_{12}, and perylene-d_{12} was added, and analyzed.

Analytical Procedure

A HP 6890 GC and a HP 5972 MSD, equipped with a 6890 autosampler and controlled by a PC computer with Enviroquant software was used to analyze the samples.

The instrument conditions were:

Column:	Restek Rtx-5 (crossbonded SE-54) 30 meter x 0.25 mm ID, 0.50 µm film thickness
Injector Temperature:	280°C
Transfer Temperature:	280°C
Source Temperature and	
Analyzer Temperature:	Controlled by thermal transfer of heat from transfer line
Temperature Program:	50°C for 0.5 min 20°C/min to 295°C; hold for 8 minutes 25°C/min to 310°C; hold for 8 minutes
Pulsed Split Injection:	Split time = 2.0 min @ 8:1 split ratio Pressure Pulse = 16 psi for 0.5 minute, then normal
Injection Volume:	1 µL

The GC/MS system was calibrated using 5 BNA standards at 20, 50, 80, 120, and 160 µg/mL. Before each analysis day, the system was tuned with 50 ng decafluorotriphenylphosphine (DFTPP) and passed a continuing calibration check when analyzing a 50 µg/mL standard mixture in which the responses were evaluated by comparison to the average response of the calibration curve.

The BNA results are listed in Table 1.5; the tentatively identified compounds are listed in Table 1.6. The concentration of the detected compounds was calculated using the following equation:

$$C_u = \frac{(A_u)(I_{is})(V_t)(DF)}{(A_{is})(RF \text{ or } RF_{ave})(V_o)(V_i)}$$

where;

C_u	=	Concentration of target analyte (µg/L)
A_u	=	Area of target analyte
I_{is}	=	Mass of specific internal standard (ng)
V_t	=	Volume of extract (µL)
DF	=	Dilution Factor
A_{is}	=	Area of specific internal standard
RF	=	Response Factor (unitless)
RF_{ave}	=	Average Response Factor
V_o	=	Volume of sample (mL)
V_i	=	Volume of extract injected (µL)

The RF_{ave} is used when a sample is associated with an initial calibration curve. The RF is used when a sample is associated with a continuing calibration curve.

Response Factor calculation:

The RF for each specific analyte is quantitated based on the area response from the continuing calibration check as follows:

$$RF = \frac{(A_C)(I_{IS})}{(A_{IS})(I_C)}$$

where:

RF	=	Response factor for a specific analyte
A_c	=	Area of the analyte in the standard
I_{is}	=	Mass of the specific internal standard
A_{is}	=	Area of the specific internal standard
I_c	=	Mass of the analyte in the standard

$$RF_{AVE} = \frac{RF_1 + \ldots + RF_n}{n}$$

and n = number of samples.

Rev. 3/9/00

Analytical Procedure for BNA in Soil

Extraction Procedure

Prior to extraction each sample was spiked with a six component surrogate mixture consisting of nitrobenzene-d_5, 2-fluorobiphenyl, terphenyl-d_{14}, phenol-d_5, 2-fluorophenol, and 2,4,6-tribromophenol. Thirty grams of sample was mixed with 30 g anhydrous sodium sulfate, and Soxhlet extracted for 16 hours with 300 mL of methylene chloride. The extract was concentrated to 1.0 mL, an internal standard mixture consisting of 1,4-dichlorobenzene-d_4, naphthalene-d_8, acenaphthene-d_{10}, phenanthrene-d_{10}, chrysene-d_{12}, and perylene-d_{12} was added, and analyzed.

Analysis Procedure

An HP 6890/5972 Gas Chromatograph/Mass Spectrometer (GC/MS), equipped with a 6890 autosampler and controlled by a PC computer equipped with Enviroquant software was used to analyze the samples.

The instrument conditions were:

Column:	Restek Rtx-5 (crossbonded SE-54) 30 meter x 0.25 mm ID, 0.50 µm film thickness
Injection Temperature:	280°C
Transfer Temperature:	280°C
Source Temperature and	
Analyzer Temperature:	Controlled by thermal transfer of heat from transfer line
Temperature Program:	50°C for 5 minutes 20°C/min to 295°C; hold for 8.5 minutes 25°C/min to 310°C; hold for 8 minutes
Pulsed Split Injection:	Split time = 2.0 min @ 8:1 split ratio Pressure Pulse = 16 psi for 0.5 minute, then normal
Injection Volume:	1 µL Must use 4 mm ID single gooseneck liners packed with 10 mm plug of silanized and conditioned glass wool.

The GC/MS system was calibrated using 5 BNA standard mixtures at 20, 50, 80, 120, and 160 µg/mL. Before each analysis day, the system was tuned with 50 ng decafluorotriphenylphosphine (DFTPP) and passed a continuing calibration check when analyzing a 50 µg/mL standard mixture in which the responses were evaluated by comparison to the average response of the calibration curve.

The BNA results, based on dry weight, are listed in Table 1.7; the tentatively identified compounds are listed in Table 1.8. The concentration of the detected compounds was calculated using the following equation:

$$C_u = \frac{(A_u)(I_{is})(V_t)(DF)}{(A_{is})(RF \text{ or } RF_{ave})(V_i)(W)(D)}$$

where;

C_u	=	Concentration of target analyte (µg/Kg)
A_u	=	Area of target analyte
I_{is}	=	Mass of specific internal standard (ng)
V_t	=	Volume of extract (µL)
DF	=	Dilution Factor
A_{is}	=	Area of specific internal standard
RF	=	Response Factor (unitless)
RF_{ave}	=	Average Response Factor
V_i	=	Volume of extract injected (µL)
W	=	Weight of sample (g)
D	=	Decimal per cent solids

The RF_{ave} is used when a sample is associated with an initial calibration curve. The RF is used when a sample is associated with a continuing calibration.

Response Factor calculation:

The RF for each specific analyte is quantitated based on the area response from the continuing calibration check as follows:

$$RF = \frac{(A_c)(I_{IS})}{(A_{IS})(I_c)}$$

where;

RF	=	Response factor for a specific analyte
A_c	=	Area of the analyte in the standard
I_{is}	=	Mass of the specific internal standard
A_{is}	=	Area of the specific internal standard
I_c	=	Mass of the analyte in the standard

$$RF_{AVE} = \frac{RF_1 + \ldots + RF_n}{n}$$

and

n = number of Samples

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Table 1.1 Results of the Analysis for VOC in Water
WA # 0-177 Sam Winer Site

Sample # :	WBLK122000	18463	18466	18465	18467
Location :		Field Blank	Trip Blank	Sam Winer Well	MW-2D
File :	BV2692.D	BV2694.D	BV2695.D	BV2696.D	BV2697.D
Dil. Fact. :	1	1	1	1	1

Compound	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L
Dichlorodifluoromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Chloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Vinyl Chloride	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Bromomethane	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
Chloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Trichlorofluoromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Acetone	U	8.0	U	8.0	U	8.0	U	8.0	U	8.0
1,1-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Methylene Chloride	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Carbon Disulfide	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Methyl-t-butyl Ether	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
trans-1,2-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1-Dichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
2-Butanone	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0
2,2-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
cis-1,2-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Chloroform	U	1.0	U	1.0	7.1	1.0	U	1.0	U	1.0
1,1-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,1-Trichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Carbon Tetrachloride	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Benzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Trichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Bromodichloromethane	U	1.0	U	1.0	3.6	1.0	U	1.0	U	1.0
Dibromomethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
cis-1,3-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
trans-1,3-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,2-Trichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,3-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Dibromochloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dibromoethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Bromoform	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
4-Methyl-2-Pentanone	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
Toluene	U	1.0	2.7	1.0	U	1.0	U	1.0	U	1.0
2-Hexanone	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
Tetrachloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Chlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,1,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Ethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
p&m-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
o-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Styrene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Isopropylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,2,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,3-Trichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
n-Propylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Bromobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,3,5-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
2-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
4-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
tert-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,4-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
sec-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
p-Isopropyltoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,3-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,4-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
n-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dibromo-3-chloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,4-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Hexachlorobutadiene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Naphthalene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,3-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0

Table 1.1 (Cont.) Results of the Analysis for VOC in Water
WA # 0-177 Sam Miner Site

Sample # :	WBLK122000	18468	18469	WBLK122100	18464
Location :		MW-2D Dup	MW-3D		MW-1S
File :	BV2692.D	BV2698.D	BV2699.D	BV2705.D	BV2710.D
Dil. Fact. :	1	1	1	1	100

Compound	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L
Dichlorodifluoromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Chloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Vinyl Chloride	U	1.0	U	1.0	U	1.0	U	1.0	140	100
Bromomethane	U	2.0	U	2.0	U	2.0	U	2.0	U	200
Chloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Trichlorofluoromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Acetone	U	8.0	U	8.0	U	8.0	U	8.0	1600	800
1,1-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Methylene Chloride	U	1.0	U	1.0	U	1.0	U	1.0	4200	100
Carbon Disulfide	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Methyl-t-butyl Ether	U	1.0	U	1.0	U	1.0	U	1.0	U	100
trans-1,2-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
1,1-Dichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	1200	100
2-Butanone	U	4.0	U	4.0	U	4.0	U	4.0	1300	400
2,2-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	100
cis-1,2-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	250	100
Chloroform	U	1.0	U	1.0	U	1.0	U	1.0	U	100
1,1-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
1,2-Dichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	400	100
1,1,1-Trichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	5800	100
Carbon Tetrachloride	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Benzene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Trichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	2900	100
1,2-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Bromodichloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Dibromomethane	U	1.0	U	1.0	U	1.0	U	1.0	U	100
cis-1,3-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
trans-1,3-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
1,1,2-Trichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	100
1,3-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Dibromochloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	100
1,2-Dibromoethane	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Bromoform	U	1.0	U	1.0	U	1.0	U	1.0	U	100
4-Methyl-2-Pentanone	U	2.0	U	2.0	U	2.0	U	2.0	380	200
Toluene	U	1.0	U	1.0	U	1.0	U	1.0	13000	100
2-Hexanone	U	2.0	U	2.0	U	2.0	U	2.0	U	200
Tetrachloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Chlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
1,1,1,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Ethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	450	100
p&m-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	1400	100
o-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	390	100
Styrene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Isopropylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
1,1,2,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	100
1,2,3-Trichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	100
n-Propylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Bromobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
1,3,5-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
2-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
4-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
tert-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
1,2,4-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
sec-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
p-Isopropyltoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
1,3-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
1,4-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
n-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
1,2-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	450	100
1,2-Dibromo-3-chloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	100
1,2,4-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Hexachlorobutadiene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
Naphthalene	U	1.0	U	1.0	U	1.0	U	1.0	U	100
1,2,3-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	100

Table 1.1 (Cont.) Results of the Analysis for VOC in Water
WA # 0-177 Sam Winer Site

Sample # :	WBLK010501 c	18478	18481	18489	18476
Location :		-Trip blk	Field blk	MW-1D dup.	MW-1S
File :	AV2720.D	AV2721.D	AV2722.D	AV2726.D	AV2728.D
Dil. Fact. :	1	1	1	1	200

Compound	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L
Dichlorodifluoromethane	3.9	1.0	U	1.0	U	1.0	U	1.0	U	200
Chloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Vinyl Chloride	U	1.0	U	1.0	U	1.0	U	1.0	380	200
Bromomethane	U	2.0	U	2.0	U	2.0	U	2.0	U	400
Chloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Trichlorofluoromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Acetone	U	8.0	4.6 J	8.0	U	8.0	U	8.0	1200	1600
1,1-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Methylene Chloride	U	1.0	U	1.0	U	1.0	U	1.0	3100	200
Carbon Disulfide	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Methyl-t-butyl Ether	U	1.0	U	1.0	U	1.0	U	1.0	U	200
trans-1,2-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
1,1-Dichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	1000	200
2-Butanone	U	4.0	U	4.0	U	4.0	U	4.0	U	800
2,2-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	200
cis-1,2-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Chloroform	U	1.0	U	1.0	U	1.0	U	1.0	U	200
1,1-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
1,2-Dichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	320	200
1,1,1-Trichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	7200	200
Carbon Tetrachloride	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Benzene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Trichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	2800	200
1,2-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Bromodichloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Dibromomethane	U	1.0	U	1.0	U	1.0	U	1.0	U	200
cis-1,3-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
trans-1,3-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
1,1,2-Trichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	200
1,3-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Dibromochloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	200
1,2-Dibromoethane	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Bromoform	U	1.0	U	1.0	U	1.0	U	1.0	U	200
4-Methyl-2-Pentanone	U	2.0	U	2.0	U	2.0	U	2.0	U	400
Toluene	U	1.0	U	1.0	U	1.0	U	1.0	16000	200
2-Hexanone	U	2.0	U	2.0	U	2.0	U	2.0	U	400
Tetrachloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Chlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
1,1,1,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Ethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	580	200
p&m-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	2000	200
o-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	460	200
Styrene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Isopropylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
1,1,2,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	200
1,2,3-Trichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	200
n-Propylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Bromobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
1,3,5-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
2-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
4-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
tert-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
1,2,4-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
sec-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
p-Isopropyltoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
1,3-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
1,4-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
n-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
1,2-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	430	200
1,2-Dibromo-3-chloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	200
1,2,4-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Hexachlorobutadiene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Naphthalene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
1,2,3-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	200
Acrolein	U	100	U	100	U	100	U	100	U	20000
Cyclohexanone	U	100	U	100	U	100	U	100	U	20000

Table 1.1 (Cont.) Results of the Analysis for VOC in Water
WA # 0-177 Sam Winer Site

Sample # :	WBlk 010901-1	18479	18483	18485	18487
Location :		MW-2D	MW-3D	MW-4D	MW-1D
File :	BV2727.D	BV2728.D	BV2729.D	BV2730.D	BV2731.D
Dil. Fact. :	1	1	1	1	1

Compound	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L
Dichlorodifluoromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Chloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Vinyl Chloride	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Bromomethane	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
Chloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Trichlorofluoromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Acetone	6.6 J	8.0	U	8.0	U	8.0	U	8.0	U	8.0
1,1-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Methylene Chloride	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Carbon Disulfide	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Methyl-t-butyl Ether	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
trans-1,2-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1-Dichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
2-Butanone	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0
2,2-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
cis-1,2-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Chloroform	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,1-Trichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Carbon Tetrachloride	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Benzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Trichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Bromodichloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Dibromomethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
cis-1,3-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
trans-1,3-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,2-Trichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,3-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Dibromochloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dibromoethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Bromoform	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
4-Methyl-2-Pentanone	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
Toluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
2-Hexanone	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
Tetrachloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Chlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,1,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Ethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
p&m-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
o-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Styrene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Isopropylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,2,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,3-Trichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
n-Propylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Bromobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,3,5-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
2-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
4-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
tert-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,4-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
sec-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
p-Isopropyltoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,3-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,4-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
n-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dibromo-3-chloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,4-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Hexachlorobutadiene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Naphthalene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,3-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Acrolein	U	100.0	U	100.0	U	100.0	U	100.0	U	100.0
Cyclohexanone	U	100.0	U	100.0	U	100.0	U	100.0	U	100.0

Table 1.2 Results of the TIC analysis for VOC in Water
WA # 0-0177 Sam Winer Site

Sample ID	Concentration
WBLK122000	No Peaks Found
18463	No Peaks Found
18465	No Peaks Found
18472	No Peaks Found
18468	No Peaks Found
18469	No Peaks Found
WBLK122100	No Peaks Found
Water blk 010501	No Peaks Found
18481	No Peaks Found
18489	No Peaks Found
Water blk 010901	No Peaks Found
18479	No Peaks Found
18483	No Peaks Found
18485	No Peaks Found
18487	No Peaks Found

Table 1.2 (Cont.) Results of the TIC analysis for VOC in Water
WA # 0-0177 Sam Winer Site

Sample # 18466
LabFile# BV2695 Con. Factor 1.00

	CAS#	Compound	Q	RT	Conc.* µg/L
1		Unknown alkane		2.49	6
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.2 (Cont.) Results of the TIC analysis for VOC in Water
WA # 0-0177 Sam Winer Site

Sample # 18464
LabFile# BV2710 Con. Factor 100

	CAS#	Compound	Q	RT	Conc.* µg/L
1	000104-76-7	2-Ethyl-1-hexanol	64	20.19	15000
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.2 (Cont.) Results of the TIC analysis for VOC in Water
WA # 0-0177 Sam Winer Site

Sample # 18478
LabFile# AV2721 Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc.* µg/L
1		C4 Alkane		2.32	8.9
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.2 (Cont.) Results of the TIC analysis for VOC in Water
WA # 0-0177 Sam Winer Site

Sample # 18476
LabFile# AV2728 Con. Factor 200

	CAS#	Compound	Q	RT	Conc.* µg/L
1	76-13-1	1,1,2-Trichloro-1,2,2-trifluoro ethane	91	5.41	1700
2		C8 Alcohol		19.47	6300
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.3 Results of the Analysis for VOC in Soil
WA # 0-177 Sam Winer Site "Based on Dry Weight"

Sample # :	MeOH BLK112200	18436	18437
Location :		mw-1S 4-6'	mw-1S 12-14'
File :	BV2580.D	BV2582.D	BV2583.D
Dil. Fact. :	50	1000	100
% Solid :	100	79	83

Compound	Conc µg/L	MDL µg/L	Conc µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg
Dichlorodifluoromethane	U	50	U	1300	U	120
Chloromethane	U	50	U	1300	U	120
Vinyl Chloride	U	50	U	1300	U	120
Bromomethane	U	100	U	2500	U	240
Chloroethane	U	50	U	1300	U	120
Trichlorofluoromethane	U	50	U	1300	U	120
Acetone	U	400	U	10000	U	960
1,1-Dichloroethene	U	50	U	1300	U	120
Methylene Chloride	U	50	4200	1300	630	120
Carbon Disulfide	U	50	U	1300	U	120
Methyl-t-butyl Ether	U	50	U	1300	U	120
trans-1,2-Dichloroethene	U	50	U	1300	U	120
1,1-Dichloroethane	U	50	U	1300	U	120
2-Butanone	U	200	U	5100	U	480
2,2-Dichloropropane	U	50	U	1300	U	120
cis-1,2-Dichloroethene	U	50	U	1300	U	120
Chloroform	U	50	U	1300	U	120
1,1-Dichloropropene	U	50	U	1300	U	120
1,2-Dichloroethane	U	50	U	1300	U	120
1,1,1-Trichloroethane	U	50	33000	1300	2800	120
Carbon Tetrachloride	U	50	U	1300	U	120
Benzene	U	50	U	1300	U	120
Trichloroethene	U	50	26000	1300	2100	120
1,2-Dichloropropane	U	50	U	1300	U	120
Bromodichloromethane	U	50	U	1300	U	120
Dibromomethane	U	50	U	1300	U	120
cis-1,3-Dichloropropene	U	50	U	1300	U	120
trans-1,3-Dichloropropene	U	50	U	1300	U	120
1,1,2-Trichloroethane	U	50	U	1300	U	120
1,3-Dichloropropane	U	50	U	1300	U	120
Dibromochloromethane	U	50	U	1300	U	120
1,2-Dibromoethane	U	50	U	1300	U	120
Bromoform	U	50	U	1300	U	120
4-Methyl-2-Pentanone	U	100	U	2500	U	240
Toluene	U	50	110000	1300	7800	120
2-Hexanone	U	100	U	2500	U	240
Tetrachloroethene	U	50	2400	1300	280	120
Chlorobenzene	U	50	U	1300	U	120
1,1,1,2-Tetrachloroethane	U	50	U	1300	U	120
Ethylbenzene	U	50	16000	1300	1100	120
p&m-Xylene	U	50	50000	1300	4500	120
o-Xylene	U	50	U	1300	U	120
Styrene	U	50	U	1300	U	120
Isopropylbenzene	U	50	U	1300	U	120
1,1,2,2-Tetrachloroethane	U	50	U	1300	U	120
1,2,3-Trichloropropane	U	50	U	1300	U	120
n-Propylbenzene	U	50	U	1300	U	120
Bromobenzene	U	50	U	1300	U	120
1,3,5-Trimethylbenzene	U	50	U	1300	U	120
2-Chlorotoluene	U	50	U	1300	U	120
4-Chlorotoluene	U	50	U	1300	U	120
tert-Butylbenzene	U	50	U	1300	U	120
1,2,4-Trimethylbenzene	U	50	U	1300	U	120
sec-Butylbenzene	U	50	U	1300	U	120
p-Isopropyltoluene	U	50	U	1300	U	120
1,3-Dichlorobenzene	U	50	U	1300	U	120
1,4-Dichlorobenzene	U	50	2300	1300	320	120
n-Butylbenzene	U	50	U	1300	U	120
1,2-Dichlorobenzene	U	50	20000	1300	2700	120
1,2-Dibromo-3-chloropropane	U	50	U	1300	U	120
1,2,4-Trichlorobenzene	U	50	U	1300	140	120
Hexachlorobutadiene	U	50	U	1300	U	120
Naphthalene	U	50	U	1300	U	120
1,2,3-Trichlorobenzene	U	50	U	1300	U	120

Table 1.3 (Cont.) Results of the Analysis for VOC in Soil
WA # 0-177 Sam Winer Site "Based on Dry Weight"

Sample # :	SBLK112200 #2	18438	18439	18440	18441
Location :		mw-1S 2D-22'	mw-2D 5-7'	mw-3D 20-22'	mw-3D 5-7'
File :	BV2581.D	BV2584.D	BV2585.D	BV2586.D	BV2587.D
Dil. Fact. :	1	1	1	1	1
% Solid :	100	86	79	90	91

Compound	Conc µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg
Dichlorodifluoromethane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Chloromethane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Vinyl Chloride	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Bromomethane	U	2.0	U	2.3	U	2.5	U	2.2	U	2.2
Chloroethane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Trichlorofluoromethane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Acetone	U	8.0	13	9.3	86	10.0	7.1 J	8.9	19	8.8
1,1-Dichloroethene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Methylene Chloride	U	1.0	11	1.2	U	1.3	42	1.1	U	1.1
Carbon Disulfide	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Methyl-t-butyl Ether	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
trans-1,2-Dichloroethene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,1-Dichloroethane	U	1.0	U	1.2	U	1.3	1.1	1.1	U	1.1
2-Butanone	U	4.0	U	4.7	U	5.1	U	4.4	U	4.4
2,2-Dichloropropane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
cis-1,2-Dichloroethene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Chloroform	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,1-Dichloropropene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,2-Dichloroethane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,1,1-Trichloroethane	U	1.0	12	1.2	U	1.3	11	1.1	U	1.1
Carbon Tetrachloride	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Benzene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Trichloroethene	U	1.0	12	1.2	U	1.3	11	1.1	U	1.1
1,2-Dichloropropane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Bromodichloromethane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Dibromomethane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
cis-1,3-Dichloropropene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
trans-1,3-Dichloropropene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,1,2-Trichloroethane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,3-Dichloropropane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Dibromochloromethane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,2-Dibromoethane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Bromoform	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
4-Methyl-2-Pentanone	U	2.0	U	2.3	U	2.5	U	2.2	U	2.2
Toluene	U	1.0	42	1.2	U	1.3	20	1.1	U	1.1
2-Hexanone	U	2.0	U	2.3	U	2.5	U	2.2	U	2.2
Tetrachloroethene	U	1.0	2.7	1.2	U	1.3	U	1.1	U	1.1
Chlorobenzene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,1,1,2-Tetrachloroethane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Ethylbenzene	U	1.0	3.4	1.2	U	1.3	U	1.1	U	1.1
p&m-Xylene	U	1.0	15	1.2	U	1.3	1.5	1.1	U	1.1
o-Xylene	U	1.0	4.9	1.2	U	1.3	U	1.1	U	1.1
Styrene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Isopropylbenzene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,1,2,2-Tetrachloroethane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,2,3-Trichloropropane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
n-Propylbenzene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Bromobenzene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,3,5-Trimethylbenzene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
2-Chlorotoluene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
4-Chlorotoluene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
tert-Butylbenzene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,2,4-Trimethylbenzene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
sec-Butylbenzene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
p-Isopropyltoluene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,3-Dichlorobenzene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,4-Dichlorobenzene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
n-Butylbenzene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,2-Dichlorobenzene	U	1.0	7.1	1.2	U	1.3	U	1.1	U	1.1
1,2-Dibromo-3-chloropropane	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,2,4-Trichlorobenzene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Hexachlorobutadiene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
Naphthalene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1
1,2,3-Trichlorobenzene	U	1.0	U	1.2	U	1.3	U	1.1	U	1.1

Table 1.3 (Cont.) Results of the Analysis for VOC in Soil
WA # 0-177 Sam Winer Site "Based on Dry Weight"

Sample # :	SBLK112200 #2	18442	18444	18445
Location :		mw-3D 5-7' DUP	mw-4D 5-7'	mw-4D 15-17'
File :	BV2581.D	BV2588.D	BV2590.D	BV2591.D
Dil. Fact. :	1	1	1	1
% Solid :	100	89	89	86

Compound	Conc µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg
Dichlorodifluoromethane	U	1.0	U	1.1	U	1.1	U	1.2
Chloromethane	U	1.0	U	1.1	U	1.1	U	1.2
Vinyl Chloride	U	1.0	U	1.1	U	1.1	U	1.2
Bromomethane	U	2.0	U	2.2	U	2.2	U	2.3
Chloroethane	U	1.0	U	1.1	U	1.1	U	1.2
Trichlorofluoromethane	U	1.0	U	1.1	U	1.1	U	1.2
Acetone	U	8.0	U	9.0	U	9.0	U	9.3
1,1-Dichloroethene	U	1.0	U	1.1	U	1.1	U	1.2
Methylene Chloride	U	1.0	U	1.1	U	1.1	U	1.2
Carbon Disulfide	U	1.0	U	1.1	U	1.1	U	1.2
Methyl-t-butyl Ether	U	1.0	U	1.1	U	1.1	U	1.2
trans-1,2-Dichloroethene	U	1.0	U	1.1	U	1.1	U	1.2
1,1-Dichloroethane	U	1.0	U	1.1	U	1.1	U	1.2
2-Butanone	U	4.0	U	4.5	U	4.5	U	4.7
2,2-Dichloropropane	U	1.0	U	1.1	U	1.1	U	1.2
cis-1,2-Dichloroethene	U	1.0	U	1.1	U	1.1	U	1.2
Chloroform	U	1.0	U	1.1	U	1.1	U	1.2
1,1-Dichloropropene	U	1.0	U	1.1	U	1.1	U	1.2
1,2-Dichloroethane	U	1.0	U	1.1	U	1.1	U	1.2
1,1,1-Trichloroethane	U	1.0	U	1.1	1.2	1.1	U	1.2
Carbon Tetrachloride	U	1.0	U	1.1	U	1.1	U	1.2
Benzene	U	1.0	U	1.1	U	1.1	U	1.2
Trichloroethene	U	1.0	U	1.1	U	1.1	U	1.2
1,2-Dichloropropane	U	1.0	U	1.1	U	1.1	U	1.2
Bromodichloromethane	U	1.0	U	1.1	U	1.1	U	1.2
Dibromomethane	U	1.0	U	1.1	U	1.1	U	1.2
cis-1,3-Dichloropropene	U	1.0	U	1.1	U	1.1	U	1.2
trans-1,3-Dichloropropene	U	1.0	U	1.1	U	1.1	U	1.2
1,1,2-Trichloroethane	U	1.0	U	1.1	U	1.1	U	1.2
1,3-Dichloropropane	U	1.0	U	1.1	U	1.1	U	1.2
Dibromochloromethane	U	1.0	U	1.1	U	1.1	U	1.2
1,2-Dibromoethane	U	1.0	U	1.1	U	1.1	U	1.2
Bromoform	U	1.0	U	1.1	U	1.1	U	1.2
4-Methyl-2-Pentanone	U	2.0	U	2.2	U	2.2	U	2.3
Toluene	U	1.0	U	1.1	1.8	1.1	U	1.2
2-Hexanone	U	2.0	U	2.2	U	2.2	U	2.3
Tetrachloroethene	U	1.0	U	1.1	U	1.1	U	1.2
Chlorobenzene	U	1.0	U	1.1	U	1.1	U	1.2
1,1,1,2-Tetrachloroethane	U	1.0	U	1.1	U	1.1	U	1.2
Ethylbenzene	U	1.0	U	1.1	U	1.1	U	1.2
p&m-Xylene	U	1.0	U	1.1	U	1.1	U	1.2
o-Xylene	U	1.0	U	1.1	U	1.1	U	1.2
Styrene	U	1.0	U	1.1	U	1.1	U	1.2
Isopropylbenzene	U	1.0	U	1.1	U	1.1	U	1.2
1,1,2,2-Tetrachloroethane	U	1.0	U	1.1	U	1.1	U	1.2
1,2,3-Trichloropropane	U	1.0	U	1.1	U	1.1	U	1.2
n-Propylbenzene	U	1.0	U	1.1	U	1.1	U	1.2
Bromobenzene	U	1.0	U	1.1	U	1.1	U	1.2
1,3,5-Trimethylbenzene	U	1.0	U	1.1	U	1.1	U	1.2
2-Chlorotoluene	U	1.0	U	1.1	U	1.1	U	1.2
4-Chlorotoluene	U	1.0	U	1.1	U	1.1	U	1.2
tert-Butylbenzene	U	1.0	U	1.1	U	1.1	U	1.2
1,2,4-Trimethylbenzene	U	1.0	U	1.1	U	1.1	U	1.2
sec-Butylbenzene	U	1.0	U	1.1	U	1.1	U	1.2
p-Isopropyltoluene	U	1.0	U	1.1	U	1.1	U	1.2
1,3-Dichlorobenzene	U	1.0	U	1.1	U	1.1	U	1.2
1,4-Dichlorobenzene	U	1.0	U	1.1	U	1.1	U	1.2
n-Butylbenzene	U	1.0	U	1.1	U	1.1	U	1.2
1,2-Dichlorobenzene	U	1.0	U	1.1	U	1.1	U	1.2
1,2-Dibromo-3-chloropropane	U	1.0	U	1.1	U	1.1	U	1.2
1,2,4-Trichlorobenzene	U	1.0	U	1.1	U	1.1	U	1.2
Hexachlorobutadiene	U	1.0	U	1.1	U	1.1	U	1.2
Naphthalene	U	1.0	U	1.1	U	1.1	U	1.2
1,2,3-Trichlorobenzene	U	1.0	U	1.1	U	1.1	U	1.2

Table 1.3 (Cont.) Results of the Analysis for VOC in Soil
WA # 0-177 Sam Winer Site "Based on Dry Weight"

Sample # :	SBLK112700	18443
Location :		mw-3D 20-22'
File :	BV2600.D	BV2603.D
Dil. Fact. :	1	1
% Solid :	100	89

Compound	Conc µg/kg	MDL µg/kg	Conc µg/kg		MDL µg/kg
Dichlorodifluoromethane	U	1.0	U		1.1
Chloromethane	U	1.0	U		1.1
Vinyl Chloride	U	1.0	U		1.1
Bromomethane	U	2.0	U		2.2
Chloroethane	U	1.0	U		1.1
Trichlorofluoromethane	U	1.0	5.9		1.1
Acetone	U	8.0	7.3	J	9.0
1,1-Dichloroethene	U	1.0	U		1.1
Methylene Chloride	U	1.0	3.8		1.1
Carbon Disulfide	U	1.0	U		1.1
Methyl-t-butyl Ether	U	1.0	U		1.1
trans-1,2-Dichloroethene	U	1.0	U		1.1
1,1-Dichloroethane	U	1.0	U		1.1
2-Butanone	U	4.0	U		4.5
2,2-Dichloropropane	U	1.0	U		1.1
cis-1,2-Dichloroethene	U	1.0	U		1.1
Chloroform	U	1.0	U		1.1
1,1-Dichloropropene	U	1.0	U		1.1
1,2-Dichloroethane	U	1.0	U		1.1
1,1,1-Trichloroethane	U	1.0	8.7		1.1
Carbon Tetrachloride	U	1.0	U		1.1
Benzene	U	1.0	U		1.1
Trichloroethene	U	1.0	5.5		1.1
1,2-Dichloropropane	U	1.0	U		1.1
Bromodichloromethane	U	1.0	U		1.1
Dibromomethane	U	1.0	U		1.1
cis-1,3-Dichloropropene	U	1.0	U		1.1
trans-1,3-Dichloropropene	U	1.0	U		1.1
1,1,2-Trichloroethane	U	1.0	U		1.1
1,3-Dichloropropane	U	1.0	U		1.1
Dibromochloromethane	U	1.0	U		1.1
1,2-Dibromoethane	U	1.0	U		1.1
Bromoform	U	1.0	U		1.1
4-Methyl-2-Pentanone	U	2.0	U		2.2
Toluene	U	1.0	20		1.1
2-Hexanone	U	2.0	U		2.2
Tetrachloroethene	U	1.0	U		1.1
Chlorobenzene	U	1.0	U		1.1
1,1,1,2-Tetrachloroethane	U	1.0	U		1.1
Ethylbenzene	U	1.0	U		1.1
p&m-Xylene	U	1.0	2.3		1.1
o-Xylene	U	1.0	U		1.1
Styrene	U	1.0	U		1.1
Isopropylbenzene	U	1.0	U		1.1
1,1,2,2-Tetrachloroethane	U	1.0	U		1.1
1,2,3-Trichloropropane	U	1.0	U		1.1
n-Propylbenzene	U	1.0	U		1.1
Bromobenzene	U	1.0	U		1.1
1,3,5-Trimethylbenzene	U	1.0	U		1.1
2-Chlorotoluene	U	1.0	U		1.1
4-Chlorotoluene	U	1.0	U		1.1
tert-Butylbenzene	U	1.0	U		1.1
1,2,4-Trimethylbenzene	U	1.0	U		1.1
sec-Butylbenzene	U	1.0	U		1.1
p-Isopropyltoluene	U	1.0	U		1.1
1,3-Dichlorobenzene	U	1.0	U		1.1
1,4-Dichlorobenzene	U	1.0	U		1.1
n-Butylbenzene	U	1.0	U		1.1
1,2-Dichlorobenzene	U	1.0	U		1.1
1,2-Dibromo-3-chloropropane	U	1.0	U		1.1
1,2,4-Trichlorobenzene	U	1.0	U		1.1
Hexachlorobutadiene	U	1.0	U		1.1
Naphthalene	U	1.0	U		1.1
1,2,3-Trichlorobenzene	U	1.0	U		1.1

Table 1.4 Results of theTIC analysis for VOC in Soil
WA # 0-0177 Sam Winer Site

Sample ID	Concentration
Soil blank 112200#2	No Peaks Found
MeOH blank 112200	No Peaks Found
18440	No Peaks Found
18441	No Peaks Found
18442	No Peaks Found
18444	No Peaks Found
18445	No Peaks Found
Soil blank 112700	No Peaks Found
18443	No Peaks Found

Table 1.4 (Cont.) Results of the TIC analysis for VOC in Soil
WA # 0-0177 Sam Winer Site

Sample # 18436
LabFile# BV2582 Con. Factor 1266

	CAS#	Compound	Q	RT	Conc.* µg/kg
1		Dimethylbenzene		17.30	46000
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (Cont.) Results of the TIC analysis for VOC in Soil
WA # 0-0177 Sam Winer Site

Sample # 18437
LabFile# BV2583 Con. Factor 120

	CAS#	Compound	Q	RT	Conc.* µg/kg
1		Unknown		2.32	4800
2		Unknown alkane		12.85	620
3		Dimethylbenzene		17.30	4600
4		Unknown alcohol		20.21	1200
5		alkanes + Siloxanes		21.16	720
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (Cont.) Results of the TIC analysis for VOC in Soil
WA # 0-0177 Sam Winer Site

Sample # 18438
LabFile# bv2584 Con. Factor 1.16

	CAS#	Compound	Q	RT	Conc.* µg/kg
1		Unknown alcohol		20.21	11
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.4 (Cont.) Results of the TIC analysis for VOC in Soil
WA # 0-0177 Sam Winer Site

Sample # 18439
LabFile# bv2585 Con. Factor 1.27

	CAS#	Compound	Q	RT	Conc.* µg/kg
1		Unknown		3.07	9
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

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Table 1.5 Results of the Analysis for BNA in Water
WA # 0-177 Sam Winer Site

Sample No.	WBLK010501		18477A		18480A		18482A		18484A	
Sample Location	LAB BLANK		MW-1S		MW-2D		Field Blank		MW-3D	
GC/MS File Name	SAM029		SAM030		SAM031		SAM032		SAM033	
Matrix	Water		Water		Water		Water		Water	
Dilution Factor	1		1		1		1		1	
% Moisture	100		100		100		100		100	

Compound Name	Conc. µg/L		MDL µg/L	Conc. µg/L		MDL µg/L	Conc. µg/L		MDL µg/L	Conc. µg/L		MDL µg/L	Conc. µg/L		MDL µg/L
Phenol	U		10	1400		10	U		10	U		10	U		10
bis(-2-Chloroethyl)Ether	U		10	U		10	U		10	U		10	U		10
2-Chlorophenol	U		10	U		10	U		10	U		10	U		10
1,3-Dichlorobenzene	U		10	19		10	U		10	U		10	U		10
1,4-Dichlorobenzene	U		10	52		10	U		10	U		10	U		10
Benzyl alcohol	U		10	280		10	U		10	U		10	U		10
1,2-Dichlorobenzene	U		10	690		10	U		10	U		10	U		10
2-Methylphenol	U		10	62		10	U		10	U		10	U		10
bis(2-Chloroisopropyl)ether	U		10	U		10	U		10	U		10	U		10
4-Methylphenol	U		10	210		10	U		10	U		10	U		10
N-Nitroso-Di-n-propylamine	U		10	U		10	U		10	U		10	U		10
Hexachloroethane	U		10	U		10	U		10	U		10	U		10
Nitrobenzene	U		10	U		10	U		10	U		10	U		10
Isophorone	U		10	U		10	U		10	U		10	U		10
2-Nitrophenol	U		10	U		10	U		10	U		10	U		10
2,4-Dimethylphenol	U		10	15		10	U		10	U		10	U		10
bis(2-Chloroethoxy)methane	U		10	U		10	U		10	U		10	U		10
2,4-Dichlorophenol	U		10	U		10	U		10	U		10	U		10
1,2,4-Trichlorobenzene	U		10	12		10	U		10	U		10	U		10
Naphthalene	U		10	U		10	U		10	U		10	U		10
4-Chloroaniline	U		10	U		10	U		10	U		10	U		10
Hexachlorobutadiene	U		10	U		10	U		10	U		10	U		10
4-Chloro-3-methylphenol	U		10	U		10	U		10	U		10	U		10
2-Methylnaphthalene	U		10	12		10	U		10	U		10	U		10
Hexachlorocyclopentadiene	U		10	U		10	U		10	U		10	U		10
2,4,6-Trichlorophenol	U		10	U		10	U		10	U		10	U		10
2,4,5-Trichlorophenol	U		10	U		10	U		10	U		10	U		10
2-Chloronaphthalene	U		10	U		10	U		10	U		10	U		10
2-Nitroaniline	U		10	U		10	U		10	U		10	U		10
Dimethylphthalate	U		10	U		10	U		10	U		10	U		10
Acenaphthylene	U		10	U		10	U		10	U		10	U		10
2,6-Dinitrotoluene	U		10	U		10	U		10	U		10	U		10
3-Nitroaniline	U		10	U		10	U		10	U		10	U		10
Acenaphthene	U		10	U		10	U		10	U		10	U		10
2,4-Dinitrophenol	U		10	U		10	U		10	U		10	U		10
4-Nitrophenol	U		10	U		10	U		10	U		10	U		10
Dibenzofuran	U		10	U		10	U		10	U		10	U		10
2,4-Dinitrotoluene	U		10	U		10	U		10	U		10	U		10
Diethylphthalate	U		10	U		10	U		10	U		10	U		10
4-Chlorophenyl-phenylether	U		10	U		10	U		10	U		10	U		10
Fluorene	U		10	U		10	U		10	U		10	U		10
4-Nitroaniline	U		10	U		10	U		10	U		10	U		10
4,6-Dinitro-2-methylphenol	U		10	U		10	U		10	U		10	U		10
N-Nitrosodiphenylamine	U		10	11000		10	U		10	U		10	U		10
4-Bromophenyl-phenylether	U		10	U		10	U		10	U		10	U		10
Hexachlorobenzene	U		10	U		10	U		10	U		10	U		10
Pentachlorophenol	U		10	U		10	U		10	U		10	U		10
Phenanthrene	U		10	U		10	U		10	U		10	U		10
Anthracene	U		10	U		10	U		10	U		10	U		10
Carbazole	U		10	U		10	U		10	U		10	U		10
Di-n-butylphthalate	U		10	16		10	U		10	U		10	U		10
Fluoranthene	U		10	U		10	U		10	U		10	U		10
Pyrene	U		10	U		10	U		10	U		10	U		10
Butylbenzylphthalate	U		10	U		10	U		10	U		10	U		10
Benzo(a)anthracene	U		10	U		10	U		10	U		10	U		10
3,3'-Dichlorobenzidine	U		10	U		10	U		10	U		10	U		10
Chrysene	U		10	U		10	U		10	U		10	U		10
Bis(2-Ethylhexyl)phthalate	3.1	J	10	2000		10	1.4	J	10	3.1	J	10	1.2	J	10
Di-n-octylphthalate	U		10	U		10	U		10	U		10	U		10
Benzo(b)fluoranthene	U		10	U		10	U		10	U		10	U		10
Benzo(k)fluoranthene	U		10	U		10	U		10	U		10	U		10
Benzo(a)pyrene	U		10	U		10	U		10	U		10	U		10
Indeno(1,2,3-cd)pyrene	U		10	U		10	U		10	U		10	U		10
Dibenzo(a,h)anthracene	U		10	U		10	U		10	U		10	U		10
Benzo(g,h,i)perylene	U		10	U		10	U		10	U		10	U		10

Table 1.5 (Cont.) Results of the Analysis for BNA in Water
WA # 0-0177 Sam Winer Site

Sample No.	18486A		18488A		18490A	
Sample Location	MW-4D		MW-1D		MW-1D DUP	
GC/MS File Name	SAM034		SAM035		SAM040	
Matrix	Water		Water		Water	
Dilution Factor	1		1		1	
% Moisture	100		100		100	
Compound Name	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L
Phenol	U	10	U	10	U	10
bis(-2-Chloroethyl)Ether	U	10	U	10	U	10
2-Chlorophenol	U	10	U	10	U	10
1,3-Dichlorobenzene	U	10	U	10	U	10
1,4-Dichlorobenzene	U	10	U	10	U	10
Benzyl alcohol	U	10	U	10	U	10
1,2-Dichlorobenzene	U	10	U	10	U	10
2-Methylphenol	U	10	U	10	U	10
bis(2-Chloroisopropyl)ether	U	10	U	10	U	10
4-Methylphenol	U	10	U	10	U	10
N-Nitroso-Di-n-propylamine	U	10	U	10	U	10
Hexachloroethane	U	10	U	10	U	10
Nitrobenzene	U	10	U	10	U	10
Isophorone	U	10	U	10	U	10
2-Nitrophenol	U	10	U	10	U	10
2,4-Dimethylphenol	U	10	U	10	U	10
bis(2-Chloroethoxy)methane	U	10	U	10	U	10
2,4-Dichlorophenol	U	10	U	10	U	10
1,2,4-Trichlorobenzene	U	10	U	10	U	10
Naphthalene	U	10	U	10	U	10
4-Chloroaniline	U	10	U	10	U	10
Hexachlorobutadiene	U	10	U	10	U	10
4-Chloro-3-methylphenol	U	10	U	10	U	10
2-Methylnaphthalene	U	10	U	10	U	10
Hexachlorocyclopentadiene	U	10	U	10	U	10
2,4,6-Trichlorophenol	U	10	U	10	U	10
2,4,5-Trichlorophenol	U	10	U	10	U	10
2-Chloronaphthalene	U	10	U	10	U	10
2-Nitroaniline	U	10	U	10	U	10
Dimethylphthalate	U	10	U	10	U	10
Acenaphthylene	U	10	U	10	U	10
2,6-Dinitrotoluene	U	10	U	10	U	10
3-Nitroaniline	U	10	U	10	U	10
Acenaphthene	U	10	U	10	U	10
2,4-Dinitrophenol	U	10	U	10	U	10
4-Nitrophenol	U	10	U	10	U	10
Dibenzofuran	U	10	U	10	U	10
2,4-Dinitrotoluene	U	10	U	10	U	10
Diethylphthalate	U	10	U	10	U	10
4-Chlorophenyl-phenylether	U	10	U	10	U	10
Fluorene	U	10	U	10	U	10
4-Nitroaniline	U	10	U	10	U	10
4,6-Dinitro-2-methylphenol	U	10	U	10	U	10
N-Nitrosodiphenylamine	U	10	U	10	U	10
4-Bromophenyl-phenylether	U	10	U	10	U	10
Hexachlorobenzene	U	10	U	10	U	10
Pentachlorophenol	U	10	U	10	U	10
Phenanthrene	U	10	U	10	U	10
Anthracene	U	10	U	10	U	10
Carbazole	U	10	U	10	U	10
Di-n-butylphthalate	U	10	U	10	U	10
Fluoranthene	U	10	U	10	U	10
Pyrene	U	10	U	10	U	10
Butylbenzylphthalate	U	10	U	10	U	10
Benzo(a)anthracene	U	10	U	10	U	10
3,3'-Dichlorobenzidine	U	10	U	10	U	10
Chrysene	U	10	U	10	U	10
Bis(2-Ethylhexyl)phthalate	U	10	U	10	U	10
Di-n-octylphthalate	U	10	U	10	U	10
Benzo(b)fluoranthene	U	10	U	10	U	10
Benzo(k)fluoranthene	U	10	U	10	U	10
Benzo(a)pyrene	U	10	U	10	U	10
Indeno(1,2,3-cd)pyrene	U	10	U	10	U	10
Dibenzo(a,h)anthracene	U	10	U	10	U	10
Benzo(g,h,i)perylene	U	10	U	10	U	10

Table 1.5 (Cont.) Results of the Analysis for BNA in Water
WA # 0-0177 Sam Winer Site

Sample No.	WBLK122100		18471A		18472A		18473A		18474A	
Sample Location	Lab Blank		Sam Winer Well		MW-2D		MW-2D Dup		MW-3D	
GC/MS File Name	SAM020		SAM021		SAM022		SAM023		SAM024	
Matrix	Water		Water		Water		Water		Water	
Dilution Factor	1		1		1		1		1	
Compound Name	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L
Phenol	U	10	U	10	U	11	U	11	U	10
bis(-2-Chloroethyl)Ether	U	10	U	10	U	11	U	11	U	10
2-Chlorophenol	U	10	U	10	U	11	U	11	U	10
1,3-Dichlorobenzene	U	10	U	10	U	11	U	11	U	10
1,4-Dichlorobenzene	U	10	U	10	U	11	U	11	U	10
Benzyl alcohol	U	10	U	10	U	11	U	11	U	10
1,2-Dichlorobenzene	U	10	U	10	U	11	U	11	U	10
2-Methylphenol	U	10	U	10	U	11	U	11	U	10
bis(2-Chloroisopropyl)ether	U	10	U	10	U	11	U	11	U	10
4-Methylphenol	U	10	U	10	U	11	U	11	U	10
N-Nitroso-Di-n-propylamine	U	10	U	10	U	11	U	11	U	10
Hexachloroethane	U	10	U	10	U	11	U	11	U	10
Nitrobenzene	U	10	U	10	U	11	U	11	U	10
Isophorone	U	10	U	10	U	11	U	11	U	10
2-Nitrophenol	U	10	U	10	U	11	U	11	U	10
2,4-Dimethylphenol	U	10	U	10	U	11	U	11	U	10
bis(2-Chloroethoxy)methane	U	10	U	10	U	11	U	11	U	10
2,4-Dichlorophenol	U	10	U	10	U	11	U	11	U	10
1,2,4-Trichlorobenzene	U	10	U	10	U	11	U	11	U	10
Naphthalene	U	10	U	10	U	11	U	11	U	10
4-Chloroaniline	U	10	U	10	U	11	U	11	U	10
Hexachlorobutadiene	U	10	U	10	U	11	U	11	U	10
4-Chloro-3-methylphenol	U	10	U	10	U	11	U	11	U	10
2-Methylnaphthalene	U	10	U	10	U	11	U	11	U	10
Hexachlorocyclopentadiene	U	10	U	10	U	11	U	11	U	10
2,4,6-Trichlorophenol	U	10	U	10	U	11	U	11	U	10
2,4,5-Trichlorophenol	U	10	U	10	U	11	U	11	U	10
2-Chloronaphthalene	U	10	U	10	U	11	U	11	U	10
2-Nitroaniline	U	10	U	10	U	11	U	11	U	10
Dimethylphthalate	U	10	U	10	U	11	U	11	U	10
Acenaphthylene	U	10	U	10	U	11	U	11	U	10
2,6-Dinitrotoluene	U	10	U	10	U	11	U	11	U	10
3-Nitroaniline	U	10	U	10	U	11	U	11	U	10
Acenaphthene	U	10	U	10	U	11	U	11	U	10
2,4-Dinitrophenol	U	10	U	10	U	11	U	11	U	10
4-Nitrophenol	U	10	U	10	U	11	U	11	U	10
Dibenzofuran	U	10	U	10	U	11	U	11	U	10
2,4-Dinitrotoluene	U	10	U	10	U	11	U	11	U	10
Diethylphthalate	U	10	U	10	U	11	U	11	U	10
4-Chlorophenyl-phenylether	U	10	U	10	U	11	U	11	U	10
Fluorene	U	10	U	10	U	11	U	11	U	10
4-Nitroaniline	U	10	U	10	U	11	U	11	U	10
4,6-Dinitro-2-methylphenol	U	10	U	10	U	11	U	11	U	10
N-Nitrosodiphenylamine	U	10	U	10	U	11	U	11	U	10
4-Bromophenyl-phenylether	U	10	U	10	U	11	U	11	U	10
Hexachlorobenzene	U	10	U	10	U	11	U	11	U	10
Pentachlorophenol	U	10	U	10	U	11	U	11	U	10
Phenanthrene	U	10	U	10	U	11	U	11	U	10
Anthracene	U	10	U	10	U	11	U	11	U	10
Carbazole	U	10	U	10	U	11	U	11	U	10
Di-n-butylphthalate	U	10	U	10	U	11	U	11	U	10
Fluoranthene	U	10	U	10	U	11	U	11	U	10
Pyrene	U	10	U	10	U	11	U	11	U	10
Butylbenzylphthalate	U	10	U	10	U	11	U	11	U	10
Benzo(a)anthracene	U	10	U	10	U	11	U	11	U	10
3,3'-Dichlorobenzidine	U	10	U	10	U	11	U	11	U	10
Chrysene	U	10	U	10	U	11	U	11	U	10
Bis(2-Ethylhexyl)phthalate	U	10	1.4 J	10	1.9 J	11	2.3 J	11	2.1 J	10
Di-n-octylphthalate	U	10	U	10	U	11	U	11	U	10
Benzo(b)fluoranthene	U	10	U	10	U	11	U	11	U	10
Benzo(k)fluoranthene	U	10	U	10	U	11	U	11	U	10
Benzo(a)pyrene	U	10	U	10	U	11	U	11	U	10
Indeno(1,2,3-cd)pyrene	U	10	U	10	U	11	U	11	U	10
Dibenzo(a,h)anthracene	U	10	U	10	U	11	U	11	U	10
Benzo(g,h,i)perylene	U	10	U	10	U	11	U	11	U	10

Table 1.6 Results of the TIC analysis for BNA in Water
WA # 0-177 Sam Winer Site

Sample ID	Concentration
18480 A	No TICs were detected
18482 A	No TICs were detected
18484 A	No TICs were detected
18486 A	No TICs were detected
18488 A	No TICs were detected
18471 A	No TICs were detected
18473 A	No TICs were detected
18474 A	No TICs were detected

Table 1.6 (Cont.) Results of the TIC analysis for BNA in Water
WA # 0-177 Sam Winer Site

Sample # WBLK010501
LabFile# SAM029 Con. Factor 1.00

	CAS#	Compound	Q	RT	Conc.* µg/L
1		Unknown ester		13.53	6
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.6 (Cont.) Results of the TIC analysis for BNA in Water
WA # 0-177 Sam Winer Site

Sample # 18490A
LabFile# SAM040 Con. Factor 1.00

	CAS#	Compound	Q	RT	Conc.* µg/L
1		Unknown		13.53	7
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.6 (Cont.) Results of the TIC analysis for BNA in Water
WA # 0-177 Sam Winer Site

Sample # 18477A
LabFile# SAM030 Con. Factor 1.00

	CAS#	Compound	Q	RT	Conc.* µg/L
1	100414	Ethylbenzene	97	4.18	30
2	95476	Benzene, 1.2-dimethyl	90	4.47	32
3		Unknown		5.22	27
4		Unknown		5.71	1000
5		Unknown		6.32	32
6		Unknown		6.50	30
7	124072	Octanoic Acid	87	7.15	40
8	65850	Benzoic Acic	91	7.21	120
9		Unknown		7.54	72
10	112050	Nonanoic Acid	91	7.59	70
11		Unknown		7.64	29
12		Unknown		7.69	69
13		Unknown		7.72	48
14	501520	Benzenepropanoic Acid	93	8.09	110
15		Unknown		8.15	36
16	143077	Dodecanoic Acid	96	9.38	40
17		Unknown		9.54	29
18		Unknown		11.12	40
19	57103	Hexadecanoic Acid	95	11.56	28
20		Unknown		12.44	43

* Estimated Concentration (Response Factor = 1)

Table 1.6 (Cont.) Results of the TIC analysis for BNA in Water
WA # 0-177 Sam Winer Site

Sample # 18472A
LabFile# SAM022 Con. Factor 1.00

	CAS#	Compound	Q	RT	Conc.* ug/L
1		Unknown		13.53	6
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.6 (Cont.) Results of the TIC analysis for BNA in Water
WA # 0-177 Sam Winer Site

Sample # WBLK122100
LabFile# SAM020

Con. Factor 1.00

	CAS#	Compound	Q	RT	Conc.* µg/L
1		Unknown		13.53	6
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.7 Results of the Analysis for BNA in Soil
WA # 0-177 Sam Winer Site
(Results are Based on Dry Weight)

Sample No.	SBLK112700	18436A,B	18437A,B	18438A,B	18439A,B
Sample Location	Lab Blank	MW-1S 4-6'	MW-1S 12-14'	MW-1S 20-22'	MW-2D 5-7'
GC/MS File Name	SAM002	SAM012	SAM013	SAM003	SAM004
Matrix	Soil	Soil	Soil	Soil	Soil
Dilution Factor	5	10	5	5	5
% Solid	100	78	83	91	79

Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
Phenol	U	1700	U	4300	5700		2000	U	1800	U	2100
bis(-2-Chloroethyl)Ether	U	1700	U	4300	U		2000	U	1800	U	2100
2-Chlorophenol	U	1700	U	4300	U		2000	U	1800	U	2100
1,3-Dichlorobenzene	U	1700	U	4300	1100	J	2000	U	1800	U	2100
1,4-Dichlorobenzene	U	1700	U	4300	2800		2000	U	1800	U	2100
Benzyl alcohol	U	1700	U	4300	2800		2000	U	1800	U	2100
1,2-Dichlorobenzene	U	1700	7400	4300	39000		2000	U	1800	U	2100
2-Methylphenol	U	1700	U	4300	U		2000	U	1800	U	2100
bis(2-Chloroisopropyl)ether	U	1700	U	4300	U		2000	U	1800	U	2100
4-Methylphenol	U	1700	U	4300	560	J	2000	U	1800	U	2100
N-Nitroso-Di-n-propylamine	U	1700	U	4300	U		2000	U	1800	U	2100
Hexachloroethane	U	1700	U	4300	U		2000	U	1800	U	2100
Nitrobenzene	U	1700	U	4300	U		2000	U	1800	U	2100
Isophorone	U	1700	U	4300	3600		2000	U	1800	U	2100
2-Nitrophenol	U	1700	U	4300	U		2000	U	1800	U	2100
2,4-Dimethylphenol	U	1700	U	4300	U		2000	U	1800	U	2100
bis(2-Chloroethoxy)methane	U	1700	U	4300	U		2000	U	1800	U	2100
2,4-Dichlorophenol	U	1700	U	4300	U		2000	U	1800	U	2100
1,2,4-Trichlorobenzene	U	1700	U	4300	2200		2000	U	1800	U	2100
Naphthalene	U	1700	U	4300	990	J	2000	U	1800	U	2100
4-Chloroaniline	U	1700	U	4300	U		2000	U	1800	U	2100
Hexachlorobutadiene	U	1700	U	4300	U		2000	U	1800	U	2100
4-Chloro-3-methylphenol	U	1700	U	4300	U		2000	U	1800	U	2100
2-Methylnaphthalene	U	1700	U	4300	1000	J	2000	U	1800	U	2100
Hexachlorocyclopentadiene	U	1700	U	4300	U		2000	U	1800	U	2100
2,4,6-Trichlorophenol	U	1700	U	4300	U		2000	U	1800	U	2100
2,4,5-Trichlorophenol	U	1700	U	4300	U		2000	U	1800	U	2100
2-Chloronaphthalene	U	1700	U	4300	U		2000	U	1800	U	2100
2-Nitroaniline	U	1700	U	4300	U		2000	U	1800	U	2100
Dimethylphthalate	U	1700	U	4300	U		2000	U	1800	U	2100
Acenaphthylene	U	1700	U	4300	U		2000	U	1800	U	2100
2,6-Dinitrotoluene	U	1700	U	4300	U		2000	U	1800	U	2100
3-Nitroaniline	U	1700	U	4300	U		2000	U	1800	U	2100
Acenaphthene	U	1700	U	4300	U		2000	U	1800	U	2100
2,4-Dinitrophenol	U	1700	U	4300	U		2000	U	1800	U	2100
4-Nitrophenol	U	1700	U	4300	U		2000	U	1800	U	2100
Dibenzofuran	U	1700	U	4300	U		2000	U	1800	U	2100
2,4-Dinitrotoluene	U	1700	U	4300	U		2000	U	1800	U	2100
Diethylphthalate	U	1700	U	4300	U		2000	U	1800	U	2100
4-Chlorophenyl-phenylether	U	1700	U	4300	U		2000	U	1800	U	2100
Fluorene	U	1700	U	4300	U		2000	U	1800	U	2100
4-Nitroaniline	U	1700	U	4300	U		2000	U	1800	U	2100
4,6-Dinitro-2-methylphenol	U	1700	U	4300	U		2000	U	1800	U	2100
N-Nitrosodiphenylamine	U	1700	460000	4300	1600000		2000	3800	1800	U	2100
4-Bromophenyl-phenylether	U	1700	U	4300	U		2000	U	1800	U	2100
Hexachlorobenzene	U	1700	U	4300	U		2000	U	1800	U	2100
Pentachlorophenol	U	1700	U	4300	U		2000	U	1800	U	2100
Phenanthrene	U	1700	U	4300	1200	J	2000	U	1800	U	2100
Anthracene	U	1700	U	4300	U		2000	U	1800	U	2100
Carbazole	U	1700	U	4300	U		2000	U	1800	U	2100
Di-n-butylphthalate	U	1700	1600	J 4300	4900		2000	U	1800	U	2100
Fluoranthene	U	1700	U	4300	U		2000	U	1800	U	2100
Pyrene	U	1700	U	4300	U		2000	U	1800	U	2100
Butylbenzylphthalate	U	1700	U	4300	U		2000	U	1800	U	2100
Benzo(a)anthracene	U	1700	U	4300	U		2000	U	1800	U	2100
3,3'-Dichlorobenzidine	U	1700	U	4300	U		2000	U	1800	U	2100
Chrysene	U	1700	U	4300	U		2000	U	1800	U	2100
Bis(2-Ethylhexyl)phthalate	U	1700	550000	4300	1500000		2000	5300	1800	U	2100
Di-n-octylphthalate	U	1700	U	4300	U		2000	U	1800	U	2100
Benzo(b)fluoranthene	U	1700	U	4300	U		2000	U	1800	U	2100
Benzo(k)fluoranthene	U	1700	U	4300	U		2000	U	1800	U	2100
Benzo(a)pyrene	U	1700	U	4300	U		2000	U	1800	U	2100
Indeno(1,2,3-cd)pyrene	U	1700	U	4300	U		2000	U	1800	U	2100
Dibenzo(a,h)anthracene	U	1700	U	4300	U		2000	U	1800	U	2100
Benzo(g,h,i)perylene	U	1700	U	4300	U		2000	U	1800	U	2100

Table 1.7 (Cont.) Results of the Analysis for BNA in Soil
WA # 0-177 Sam Winer Site
(Results are Based on Dry Weight)

Sample No.	18440A,B	18441A,B	18442A,B	18444A,B	18445A,B
Sample Location	MW-2D 20-22'	MW-3D 5-7'	MW-3D 5-7' Dup	MW-4D 5-7'	MW-4D 15-17'
GC/MS File Name	SAM005	SAM006	SAM007	SAM008	SAM009
Matrix	Soil	Soil	Soil	Soil	Soil
Dilution Factor	5	5	5	5	5
% Solid	89	81	87	89	84

Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
Phenol	U	1900	U	2000	U	1900	U	1900	U	2000
bis(-2-Chloroethyl)Ether	U	1900	U	2000	U	1900	U	1900	U	2000
2-Chlorophenol	U	1900	U	2000	U	1900	U	1900	U	2000
1,3-Dichlorobenzene	U	1900	U	2000	U	1900	U	1900	U	2000
1,4-Dichlorobenzene	U	1900	U	2000	U	1900	U	1900	U	2000
Benzyl alcohol	U	1900	U	2000	U	1900	U	1900	U	2000
1,2-Dichlorobenzene	U	1900	U	2000	U	1900	U	1900	U	2000
2-Methylphenol	U	1900	U	2000	U	1900	U	1900	U	2000
bis(2-Chloroisopropyl)ether	U	1900	U	2000	U	1900	U	1900	U	2000
4-Methylphenol	U	1900	U	2000	U	1900	U	1900	U	2000
N-Nitroso-Di-n-propylamine	U	1900	U	2000	U	1900	U	1900	U	2000
Hexachloroethane	U	1900	U	2000	U	1900	U	1900	U	2000
Nitrobenzene	U	1900	U	2000	U	1900	U	1900	U	2000
Isophorone	U	1900	U	2000	U	1900	U	1900	U	2000
2-Nitrophenol	U	1900	U	2000	U	1900	U	1900	U	2000
2,4-Dimethylphenol	U	1900	U	2000	U	1900	U	1900	U	2000
bis(2-Chloroethoxy)methane	U	1900	U	2000	U	1900	U	1900	U	2000
2,4-Dichlorophenol	U	1900	U	2000	U	1900	U	1900	U	2000
1,2,4-Trichlorobenzene	U	1900	U	2000	U	1900	U	1900	U	2000
Naphthalene	U	1900	U	2000	U	1900	U	1900	U	2000
4-Chloroaniline	U	1900	U	2000	U	1900	U	1900	U	2000
Hexachlorobutadiene	U	1900	U	2000	U	1900	U	1900	U	2000
4-Chloro-3-methylphenol	U	1900	U	2000	U	1900	U	1900	U	2000
2-Methylnaphthalene	U	1900	U	2000	U	1900	U	1900	U	2000
Hexachlorocyclopentadiene	U	1900	U	2000	U	1900	U	1900	U	2000
2,4,6-Trichlorophenol	U	1900	U	2000	U	1900	U	1900	U	2000
2,4,5-Trichlorophenol	U	1900	U	2000	U	1900	U	1900	U	2000
2-Chloronaphthalene	U	1900	U	2000	U	1900	U	1900	U	2000
2-Nitroaniline	U	1900	U	2000	U	1900	U	1900	U	2000
Dimethylphthalate	U	1900	U	2000	U	1900	U	1900	U	2000
Acenaphthylene	U	1900	U	2000	U	1900	U	1900	U	2000
2,6-Dinitrotoluene	U	1900	U	2000	U	1900	U	1900	U	2000
3-Nitroaniline	U	1900	U	2000	U	1900	U	1900	U	2000
Acenaphthene	U	1900	U	2000	U	1900	U	1900	U	2000
2,4-Dinitrophenol	U	1900	U	2000	U	1900	U	1900	U	2000
4-Nitrophenol	U	1900	U	2000	U	1900	U	1900	U	2000
Dibenzofuran	U	1900	U	2000	U	1900	U	1900	U	2000
2,4-Dinitrotoluene	U	1900	U	2000	U	1900	U	1900	U	2000
Diethylphthalate	U	1900	U	2000	U	1900	U	1900	U	2000
4-Chlorophenyl-phenylether	U	1900	U	2000	U	1900	U	1900	U	2000
Fluorene	U	1900	U	2000	U	1900	U	1900	U	2000
4-Nitroaniline	U	1900	U	2000	U	1900	U	1900	U	2000
4,6-Dinitro-2-methylphenol	U	1900	U	2000	U	1900	U	1900	U	2000
N-Nitrosodiphenylamine	U	1900	U	2000	U	1900	U	1900	U	2000
4-Bromophenyl-phenylether	U	1900	U	2000	U	1900	U	1900	U	2000
Hexachlorobenzene	U	1900	U	2000	U	1900	U	1900	U	2000
Pentachlorophenol	U	1900	U	2000	U	1900	U	1900	U	2000
Phenanthrene	U	1900	U	2000	U	1900	U	1900	U	2000
Anthracene	U	1900	U	2000	U	1900	U	1900	U	2000
Carbazole	U	1900	U	2000	U	1900	U	1900	U	2000
Di-n-butylphthalate	U	1900	U	2000	U	1900	U	1900	U	2000
Fluoranthene	U	1900	U	2000	U	1900	U	1900	U	2000
Pyrene	U	1900	U	2000	U	1900	U	1900	U	2000
Butylbenzylphthalate	U	1900	U	2000	U	1900	U	1900	U	2000
Benzo(a)anthracene	U	1900	U	2000	U	1900	U	1900	U	2000
3,3'-Dichlorobenzidine	U	1900	U	2000	U	1900	U	1900	U	2000
Chrysene	U	1900	U	2000	U	1900	U	1900	U	2000
Bis(2-Ethylhexyl)phthalate	U	1900	U	2000	U	1900	U	1900	U	2000
Di-n-octylphthalate	U	1900	U	2000	U	1900	U	1900	U	2000
Benzo(b)fluoranthene	U	1900	U	2000	U	1900	U	1900	U	2000
Benzo(k)fluoranthene	U	1900	U	2000	U	1900	U	1900	U	2000
Benzo(a)pyrene	U	1900	U	2000	U	1900	U	1900	U	2000
Indeno(1,2,3-cd)pyrene	U	1900	U	2000	U	1900	U	1900	U	2000
Dibenzo(a,h)anthracene	U	1900	U	2000	U	1900	U	1900	U	2000
Benzo(g,h,i)perylene	U	1900	U	2000	U	1900	U	1900	U	2000

Table 1.8 Results of the TIC analysis for BNA in Soil
WA # 0-177 Sam Winer Site

Sample ID	Concentration
SBLK112700	No TICs were detected
18438 A,B	No TICs were detected
18439 A,B	No TICs were detected
18440 A,B	No TICs were detected
18441 A,B	No TICs were detected
18442 A,B	No TICs were detected
18444 A,B	No TICs were detected
18445A,B	No TICs were detected

Table 1.8 (Cont.) Results of the TIC analysis for BNA in Soil
WA # 0-177 Sam Winer Site

Sample # 18436A,B
LabFile# SAM012 Con. Factor 429

	CAS#	Compound	Q	RT	Conc.* µg/kg
1		Organic acid		12.42	4700
2	000103-23-1	Hexanedioic acid, bis(2-ethylhexyl) ester	91	13.63	41000
3		Unknown		14.17	7400
4		Carboxylic acid		14.31	4800
5		Organic acid		15.38	37000
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.8 (Cont.) Results of the TIC analysis for BNA in Soil
WA # 0-177 Sam Winer Site

Sample # 18437A,B
LabFile# SAM013 Con. Factor 202

	CAS#	Compound	Q	RT	Conc.* µg/kg
1	000120-40-1	Dodecanamide, N,N-bis(2-hydroxyethyl)-	95	9.34	8100
2		Hexadecanoic acid + unknown		11.56	8100
3		Organic acid		12.46	19000
4		Octadecanoic acid + unknown		12.52	4200
5		Unknown		15.40	1100
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Results of the Surrogate Percent Recoveries/Internal Standard Areas for VOC in Water

Prior to purging, the samples were spiked with a three component surrogate mixture consisting of toluene-d_8, 4-bromofluorobenzene and 1,2-dichloroethane-d_4. The surrogate percent recoveries for the water samples, listed in Table 2.1, ranged from 83 to 121. Eighty four out of ninety values were within the acceptable QC limits. The internal standard areas for the water samples are listed in table 2.1. All ninety internal standard areas reported values were within acceptable QC limits.

Results of the MS/MSD Analysis for VOC in Water

Samples 18472 and 18479 were chosen for the matrix spikes/matrix spikes duplicate (MS/MSD) analyses for the water samples. The percent recoveries, ranging from 94 to 118, are listed in Table 2.2. Twenty out of twenty values were within the acceptable QC limits. The relative percent differences, also listed in Table 2.2, ranged from zero (0) to 2 and all ten reported values were within the acceptable QC limits.

Results of the Surrogate Percent Recoveries/Internal Standard Areas for VOC in Soil

Prior to purging, the samples were spiked with a three component surrogate mixture consisting of toluene-d_8, 4-bromofluorobenzene and 1,2-dichloroethane-d_4. The surrogate percent recoveries for the soil samples, listed in Table 2.3, ranged from 58 to 130. Forty four out of forty five percent recoveries were within the acceptable QC limits. The internal standard areas for the water samples are listed in table 2.3. Forty one out of forty five internal standard areas reported values were within acceptable QC limits.

Results of the MS/MSD Analysis for VOC in Soil

Samples 18442 was chosen for the matrix spikes/matrix spikes duplicate (MS/MSD) analyses for the soil samples. The percent recoveries, ranging from 88 to 119, are listed in Table 2.4. Ten out of ten percent recoveries were within the acceptable QC limits. The relative percent differences, also listed in Table 2.4, ranged from one to five and all five values were within the acceptable QC limits.

Table 2.1 Results of the Internal Standard Areas and Surrogate Percent Recoveries for VOC in Water
WA # 0-0177 Sam Winer Site

File ID	Sample No.	IS 1	IS 2	IS 3	Surr. 1	Surr. 2	Surr. 3
Cal Check Area	BV2690.D	80835	735892	500687			
BV2692.D	WBLK122000	74152	699693	464296	104	102	95
BV2694.D	18463	71062	640153	421291	106	101	96
BV2695.D	18466	70690	629447	412613	105	102	96
BV2696.D	18465	70336	626141	413030	106	101	95
BV2697.D	18472	70108	633345	425671	107	101	95
BV2698.D	18468	68384	631570	425017	107	101	95
BV2699.D	18469	67981	629563	423191	107	101	94
BV2700.D	18472ms	63700	605827	401071	106	100	94
BV2701.D	18472msd	65657	612322	408221	107	99	93
Cal Check Area	BV2704.D	75894	647445	451433			
BV2705.D	WBLK122100	68356	601220	406761	101	102	94
BV2710.D	18464/100x	65839	556452	391762	106	100	93
Cal Check Area	AV2716.D	317318	2507630	1404160			
AV2720.D	Water blk 010501	243313	1965796	1039546	102	108	88
AV2721.D	18478	212196	1720611	928377	107	107	86
AV2722.D	18481	191870	1578328	865272	111	107	85
AV2726.D	18489	169116	1387260	779229	116 *	106	83
AV2728.D	18476/200x	171153	1383848	800466	116 *	104	89
AV2723.D	18479	180917	1468936	809619	105	99	94
AV2724.D	18483	173696	1408934	780681	106	99	92
AV2725.D	18487	171645	1406763	790233	106	99	92
AV2727.D	18485	169318	1365752	761809	107	99	92
Cal Check Area	BV2724.D	66381	618199	444597			
BV2727.D	WBlk 010901	54063	506760	364545	108	102	91
BV2728.D	18479	49909	483904	350970	109	102	90
BV2729.D	18483	48181	453938	331130	108	102	90
BV2730.D	18485	47199	442177	326106	111	102	89
BV2731.D	18487	46830	428239	318044	114	101	89
BV2732.D	18489	44573	408794	307818	117 *	100	88
BV2735.D	18476/200x	37354	347632	274731	121 *	97	88
Cal Check Area	BV2739.D	36679	350202	288338			
BV2741.D	WBlk 010901	36887	331294	258337	99	104	88
BV2742.D	18479ms	34335	336798	261005	102	102	86
BV2743.D	18479msd	32365	328324	254735	103	102	86

			Surrogate Limits	Water
IS 1	Bromochloromethane	Surr. 1	1,2-Dichloroethane-d4	76 - 114
IS 2	1,4-Difluorobenzene	Surr. 2	Toluene-d8	88 - 110
IS 3	Chlorobenzene-d5	Surr. 3	p-Bromofluorobenzene	86 - 115

Table 2.2 Results of the MS/MSD Analysis for VOC in Water
WA # 0-0177 Sam Winer Site

Sample ID: 18472

Compound Name	Sample Conc. µg/L	MS Spike Added µg/L	MSD Spike Added µg/L	MS Conc. µg/L	MSD Conc. µg/L	MS % Rec.	MSD % Rec.	RPD	QC Limits RPD	QC Limits % Rec.
1,1-Dichloroethene	U	50	50	58	58	117	116	1	14	61 - 145
Benzene	U	50	50	52	52	104	105	1	11	76 - 127
Trichloroethene	U	50	50	49	50	98	100	2	14	71 - 120
Toluene	U	50	50	53	53	106	106	0	13	76 - 125
Chlorobenzene	U	50	50	49	49	99	98	1	13	75 - 130

Sample ID: 18479

Compound Name	Sample Conc. µg/L	MS Spike Added µg/L	MSD Spike Added µg/L	MS Conc. µg/L	MSD Conc. µg/L	MS % Rec.	MSD % Rec.	RPD	QC Limits RPD	QC Limits % Rec.
1,1-Dichloroethene	U	50	50	57.9	59	116	118	2	14	61 - 145
Benzene	U	50	50	49.8	50	100	100	0	11	76 - 127
Trichloroethene	U	50	50	47.2	48	94	95	1	14	71 - 120
Toluene	U	50	50	51.7	52	103	105	1	13	76 - 125
Chlorobenzene	U	50	50	47.4	48	95	97	2	13	75 - 130

Table 2.3 Results of the Internal Standard Areas and Surrogate Percent Recoveries for VOC in Soil
WA # 0-0177 Sam Winer Site

File ID	Sample No.	IS 1	IS 2	IS 3	Surr. 1	Surr. 2	Surr. 3
Cal Check Area	BV2578.D	41654	363498	225040			
BV2580.D	MeOH blank	30527	277487	172064	106	103	94
BV2581.D	SBLK112200 #2	29946	259473	156806	107	104	91
BV2582.D	18436 1000x	29652	255714	177955	111	98	93
BV2583.D	18437/100x	28471	266544	175413	112	101	95
BV2584.D	18438	30371	244158	129345	110	114	81
BV2585.D	18439	28494	227023	143313	111	100	89
BV2586.D	18440	30798	251136	117103	110	126	64
BV2587.D	18441	30240	253501	150776	112	104	85
BV2588.D	18442	29568	241242	151920	113	100	92
BV2590.D	18444	29674	249178	148525	119	104	83
BV2591.D	18445	11888 *	58637 *	38146 *	120	99	67
Cal Check Area	BV2597.D	28994	258331	182684			
BV2600.D	SBLK112700	24639	210220	135798	101	106	87
BV2602.D	18442 msd	21674	182641	114326	103	102	82
BV2603.D	18443	22639	162411	77545 *	104	130	58
BV2604.D	18442 ms	21580	183207	119278	108	101	80

Surrogate Limits

				Soil
IS 1	Bromochloromethane	Surr. 1	1,2-Dichloroethane-d4	70 - 121
IS 2	1,4-Difluorobenzene	Surr. 2	Toluene-d8	84 - 138
IS 3	Chlorobenzene-d5	Surr. 3	p-Bromofluorobenzene	59 -115

Table 2.4 Results of the MS/MSD Analysis for VOC in Soil
WA # 0-0177 Sam Winer Site
Based on Dry Weight

Sample ID: 18442

Compound Name	Sample Conc. µg/kg	Spike Added µg/kg	Spike Added µg/kg	MS Conc. µg/kg	MSD Conc. µg/kg	MS % Rec.	MSD % Rec.	RPD	QC Limits RPD	QC Limits % Rec.
1,1-Dichloroethene	U	56.2	56.2	64	67	115	119	4	22	59 - 172
Benzene	U	56.2	56.2	56	56	100	99	2	21	66 - 142
Trichloroethene	U	56.2	56.2	55	55	98	98	1	24	62 - 137
Toluene	U	56.2	56.2	61	60	108	107	1	21	59 - 139
Chlorobenzene	U	56.2	56.2	52	50	93	88	5	21	60 - 133

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Results of the Surrogate Percent Recoveries/Internal Standard Areas for BNA in Water

Before extraction, each sample was spiked with a six component mixture of CLP surrogate standards consisting of nitrobenzene-d_5, 2-fluorobiphenyl, terphenyl-d_{14}, phenol-d_5, 2-fluorophenol, and 2,4,6-tribromophenol. The surrogate percent recoveries for the water samples, listed in Table 2.5, ranged from 13 to 152. One hundred out of one hundred and six values were within the acceptable QC limits. Eight surrogates were diluted out. The internal standard areas for the water samples are listed in table 2.6. One hundred and eleven out of one hundred and fourteen internal standard areas reported values were within acceptable QC limits.

Results of the MS/MSD Analysis for BNA in Water

Samples 18488B and 18488C were chosen for the matrix spike/matrix spike duplicate (MS/MSD) analyses for the water samples. The percent recoveries, ranging from 24 to 79, are listed in Table 2.7. Twenty two out of twenty two values were within the acceptable QC limits. The relative percent differences, also listed in Table 2.7, ranged from 4 to 24 and all eleven reported values were within the acceptable QC limits.

Results of the BS/BSD Analysis for BNA in Water

Blank 122100 was chosen for the blank spike/blank spike duplicate (BS/BSD) analyses for the water samples. The percent recoveries, ranging from 14 to 59, are listed in Table 2.8. Twenty two out of twenty two values were within the acceptable QC limits. The relative percent differences, also listed in Table 2.8, ranged from 2 to 18 and all eleven reported values were within the acceptable QC limits.

Results of the Surrogate Percent Recoveries/Internal Standard Areas for BNA in Soil

Before extraction, each sample was spiked with a six component mixture of CLP surrogate standards consisting of nitrobenzene-d_5, 2-fluorobiphenyl, terphenyl-d_{14}, phenol-d_5, 2-fluorophenol, and 2,4,6-tribromophenol. The reported surrogate percent recoveries for the soil samples, listed in Table 2.9, ranged from 49 to 100. All seventy two reported percent recoveries were within the acceptable QC limits. Twelve surrogates were diluted out. The internal standard areas for the soil samples are listed in Table 2.10. All 84 internal standard areas values were within acceptable QC limits.

Results of the MS/MSD Analysis for BNA in Soil

Sample 18439A,B was chosen for the matrix spike/matrix spike duplicate (MS/MSD) analyses for the soil samples. The percent recoveries, ranging from 29 to 77, are listed in Table 2.11. Twenty two out of twenty two percent recoveries were within the acceptable QC limits. The relative percent differences, also listed in Table 2.11, ranged from 3 to 14 and all eleven values were within the acceptable QC limits.

Table 2.5 Results of the Surrogate Percent Recoveries for BNA in Water
WA # 0-177 Sam Winer Site

Sample No.	File ID	Surr. 1	Surr. 2	Surr. 3	Surr. 4	Surr. 5	Surr. 6
WBLK010501	SAM029.D	47	33	81	79	71	83
18477A	SAM030.D	24	30	152 *	79	77	67
18480A	SAM031.D	35	24	64	64	63	80
18482A	SAM032.D	26	18	52	53	46	83
18484A	SAM033.D	37	25	70	66	73	93
18486A	SAM034.D	43	30	80	77	76	93
18488A	SAM035.D	42	29	74	75	75	92
18488C (MSD)	SAM039.D	37	26	69	74	70	91
18490A	SAM040.D	42	28	76	79	71	90
18477A , D25	SAM041.D	D	D	97	91	72	80
18488B (MS)	SAM042.D	43	32	75	81	75	95
18477A, D250	SAM044.D	D	D	D	D	D	D
WBLK122100	SAM020.D	44	30	78	74	61	90
18471A	SAM021.D	36	25	67	66	56	88
18472A	SAM022.D	17 *	13	28 *	32 *	34	77
18473A	SAM023.D	23	16	37	38 *	40	79
18474A	SAM024.D	23	15	37	41 *	34	67
BS122100	SAM025.D	28	19	46	49	46	81
BSD122100	SAM026.D	29	20	47	49	40	71

D: the surrogate was diluted out

	Surrogate	Limits
Surr 1 =	2-Fluorophenol	(21-110)
Surr 2 =	Phenol-d5	(10-110)
Surr 3 =	Nitrobenzene-d5	(35-114)
Surr 4 =	2-Fluorobiphenyl	(43-116)
Surr 5 =	2,4,6-Tribromophenol	(10-123)
Surr 6 =	Terphenyl-d14	(18-137)

Table 2.6 Results of the Internal Standard Areas for BNA in Water
WA # 0-177 Sam Winer Site

Sample No.	File ID	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
Cal Check Area	SAM038.D	78083	290744	146264	233262	232563	212269
18488C (MSD)	SAM039.D	56562	208041	108688	200415	200813	179258
18490A	SAM040.D	52991	193908	102456	185228	191003	168577
18477A , D25	SAM041.D	35305 *	161365	87060	157445	162982	149307
18488B (MS)	SAM042.D	53085	195852	102826	188048	191531	169075
18477A, D250	SAM044.D	42354	175216	94222	168576	173587	152476
Cal Check Area	SAM028.D	64996	242847	120478	188617	175947	157044
WBLK010501	SAM029.D	49453	184125	94539	171858	173271	162410
18477A	SAM030.D	31525 *	91743 *	92932	161512	163354	162447
18480A	SAM031.D	50452	188663	98067	177408	181233	191085
18482A	SAM032.D	48957	181303	94376	168914	165025	150992
18484A	SAM033.D	49844	183226	93436	167387	164972	148503
18486A	SAM034.D	51846	189867	99044	172368	169682	153253
18488A	SAM035.D	51134	186821	96285	171565	169964	149626
Cal Check Area	SAM019.D	68934	258892	128353	200653	189598	168929
WBLK122100	SAM020.D	51736	193812	97876	174204	154451	129217
18471A	SAM021.D	54704	198772	101652	184852	172916	147977
18472A	SAM022.D	58272	216472	109610	196114	192277	166001
18473A	SAM023.D	55984	206235	104041	190866	187376	170926
18474A	SAM024.D	53070	193906	99375	181431	180793	167705
BS122100	SAM025.D	55061	205431	105303	190913	190045	176697
BSD122100	SAM026.D	60812	227143	114974	210824	209943	191408

Internal Standard

IS 1 = Dichlorobenzene - d4
IS 2 = Naphthalene - d8
IS 3 = Acenaphthene - d10
IS 4 = Phenanthrene - d10
IS 5 = Chrysene - d12
IS 6 = Perylene - d12

Table 2.7 Results of the MS/MSD Analysis for BNA in Water
WA # 0-177 Sam Winer Site

Sample ID: 18488B,C

Compound Name	Sample Conc. µg/L	MS Spike Added µg/L	MSD Spike Added µg/L	MS Conc. µg/L	MSD Conc. µg/L	MS % Rec.	MSD % Rec.	RPD	QC Limits RPD	QC Limits % Rec.
Phenol	U	100	100	30.3	23.7	30	24	24	42	12 - 110
2-Chlorophenol	U	100	100	62.5	56.6	63	57	10	40	27 - 123
1,4-Dichlorobenzene	U	50	50	30.4	27.5	61	55	10	28	36 - 97
N-Nitroso-Di-N-Propylamine	U	50	50	37.7	33.9	75	68	11	38	41 - 116
1,2,4-Trichlorobenzene	U	50	50	34.0	30.0	68	60	13	28	39 - 98
4-Chloro-3-Methylphenol	U	100	100	72.4	64.1	72	64	12	42	23 - 97
Acenaphthene	U	50	50	39.1	35.8	78	72	9	31	46 - 118
4-Nitrophenol	U	100	100	28.7	25.2	29	25	13	50	10 - 80
2,4-Dinitrotoluene	U	50	50	38.6	35.9	77	72	7	38	24 - 96
Pentachlorophenol	U	100	100	66.7	61.0	67	61	9	50	9 - 103
Pyrene	U	50	50	39.7	38.2	79	76	4	31	26 - 127

Table 2.8 Results of the BS/BSD Analysis for BNA in Water
WA # 0-177 Sam Winer Site

Sample ID: BS/BSD

Compound Name	Sample Conc. µg/L	BS Spike Added µg/L	BSD Spike Added µg/L	BS Conc. µg/L	BSD µg/L	BS % Rec.	BSD % Rec.	RPD	QC Limits RPD	QC Limits % Rec.
Phenol	U	100	100	17.5	18.1	18	18	3	42	12 - 110
2-Chlorophenol	U	100	100	39.5	40.1	40	40	2	40	27 - 123
1,4-Dichlorobenzene	U	50	50	19.0	20.0	38	40	5	28	36 - 97
N-Nitroso-Di-N-Propylamine	U	50	50	23.2	22.0	46	44	5	38	41 - 116
1,2,4-Trichlorobenzene	U	50	50	20.7	21.1	41	42	2	28	39 - 98
4-Chloro-3-Methylphenol	U	100	100	45.6	43.7	46	44	4	42	23 - 97
Acenaphthene	U	50	50	25.3	24.4	51	49	4	31	46 - 118
4-Nitrophenol	U	100	100	16.7	14.0	17	14	18	50	10 - 80
2,4-Dinitrotoluene	U	50	50	24.1	22.8	48	46	6	38	24 - 96
Pentachlorophenol	U	100	100	25.1	28.6	25	29	13	50	9 - 103
Pyrene	U	50	50	29.6	26.2	59	52	12	31	26 - 127

Table 2.9 Results of the Surrogate Percent Recoveries for BNA in Soil
WA # 0-177 Sam Winer Site

Sample No.	File ID	Surr. 1	Surr. 2	Surr. 3	Surr. 4	Surr. 5	Surr. 6
SBLK112700	SAM002.D	63	63	66	71	53	77
18438A,B	SAM003.D	50	53	53	63	60	82
18439A,B	SAM004.D	65	68	65	71	57	71
18440A,B	SAM005.D	66	66	70	82	54	77
18441A,B	SAM006.D	71	71	69	80	57	74
18442A,B	SAM007.D	69	69	67	78	54	74
18444A,B	SAM008.D	50	61	57	68	49	77
18445A,B	SAM009.D	66	69	71	84	53	77
18439A,B MS	SAM010.D	62	65	61	72	62	74
18439A,B MSD	SAM011.D	66	71	64	76	61	77
18436A,B	SAM012.D	58	73	62	77	59	68
18437A,B	SAM013.D	81	100	90	85	89	79
18436 A,B 10x	SAM015.D	D	D	D	D	D	D
18436 A,B 50x	SAM016.D	D	D	D	D	D	D

D: the surrogate was diluted out

	Surrogate	QC Limits
Surr 1 =	2-Fluorophenol	(21-110)
Surr 2 =	Phenol-d5	(10-110)
Surr 3 =	Nitrobenzene-d5	(35-114)
Surr 4 =	2-Fluorobiphenyl	(43-116)
Surr 5 =	2,4,6-Tribromophenol	(10-123)
Surr 6 =	Terphenyl-d14	(18-137)

Table 2.10 Results of the Internal Standard Areas for BNA in Soil
WA # 0-177 Sam Winer Site

Sample No.	File ID	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
Cal Check Area	SAM001.D	60136	226962	112771	180591	176559	156704
SBLK112700	SAM002.D	57499	214277	111868	204682	198213	160907
18438A,B	SAM003.D	56293	206510	108256	195959	187023	163690
18439A,B	SAM004.D	56417	208515	111545	198083	200387	176334
18440A,B	SAM005.D	55798	203539	104739	190183	189865	170661
18441A,B	SAM006.D	59818	217510	114441	208076	207433	189336
18442A,B	SAM007.D	58368	216563	112002	201572	201591	188027
18444A,B	SAM008.D	55313	210606	108535	194639	196569	175706
18445A,B	SAM009.D	55213	204063	107502	194578	198953	180913
18439A,B MS	SAM010.D	57774	210233	110300	199504	199117	180445
18439A,B MSD	SAM011.D	54400	202569	105124	188848	187994	168992
18436A,B	SAM012.D	54016	237197	122506	224481	215720	203370
18437A,B	SAM013.D	43625	204665	108529	194243	186322	175089
Cal Check Area	SAM014.D	63241	239903	119475	190084	182294	167866
18436A,B 10x	SAM015.D	54208	206472	106985	192098	188990	179003
18437A,B 50x	SAM016.D	49370	195462	104416	186875	185760	179017

Internal Standard

IS 1 = Dichlorobenzene - d4
IS 2 = Naphthalene - d8
IS 3 = Acenaphthene - d10
IS 4 = Phenanthrene - d10
IS 5 = Chrysene - d12
IS 6 = Perylene - d12

Table 2.11 Results of MS/MSD Analysis for BNA in Soil
WA # 0-177 Sam Winer Site
(Based on Dry Weight)

Sample ID: 18439 A,B

Compound Name	Sample Conc. µg/kg	MS Spike Added µg/kg	MSD Spike Added µg/kg	MS Conc. µg/kg	MSD Conc. µg/kg	MS % Rec.	MSD % Rec.	RPD	QC Limits RPD	QC Limits % Rec.
Phenol	U	4220	4220	2560	2700	61	64	5	35	26 - 90
2-Chlorophenol	U	4220	4220	2560	2800	61	66	9	50	25 - 102
1,4-Dichlorobenzene	U	2110	2110	1250	1340	59	64	7	27	28 - 104
N-Nitroso-Di-N-Propylamine	U	2110	2110	1310	1410	62	67	7	38	41 - 126
1,2,4-Trichlorobenzene	U	2110	2110	1390	1430	66	68	3	23	38 - 107
4-Chloro-3-Methylphenol	U	4220	4220	2970	3070	70	73	3	33	26 - 103
Acenaphthene	U	2110	2110	1560	1620	74	77	4	19	31 - 137
4-Nitrophenol	U	4220	4220	1990	1730	47	41	14	50	11 - 114
2,4-Dinitrotoluene	U	2110	2110	1200	1280	57	61	7	47	28 - 89
Pentachlorophenol	U	4220	4220	1400	1230	33	29	13	47	17 - 109
Pyrene	U	2110	2110	1510	1570	72	74	4	36	35 - 142

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EPA Contract 68-C99-223

CHAIN OF CUSTODY RECORD

Project Name: Sam Winer Site
Project Number: RIA00177
LM Contact: D. Bussey Phone: 494-4056

No: 19904
Sheet 01 of 01 (Do not copy)
(for addnl. samples use new form)

12L000

Sample Identification — **Analyses Requested**

REAC#	Sample No	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	VOCs	Semi VOCs			
234	18463A,B,C	Field Blank	~~GW~~ W	12/19/00	3	40ml glass / 4°C	X				
235	18464A,B,C	MW-1S	GW		3	40ml glass / 4°C	X				
236	18465A,B,C	Sam Winer well	GW		3	40ml glass / 4°C	X				
237	18466A,B,C	Trip Blank	W		3	40 ml glass / 4°C	X				
238	18467A,B,C†	MW-2D	GW		3	40 ml glass / 4°C	X				
239	18468A,B,C	MW-2D Dup	GW		3	40 ml glass / 4°C	X				
240	18469A,B,C	MW-3D	GW		3	40 ml glass / 4°C	X				
241	18470A *	MW-1S	GW		1 X	1LT Amber / 4°C		X			
242	18471A	Sam Winer well	GW		1	1LT Amber / 4°C		X			
243	18472A††	MW-2D	GW		1	1LT Amber / 4°C		X			
244	18473A	MW-2D Dup	GW		1	1LT Amber / 4°C		X			
245	18474A	MW-3D	GW		1	1LT Amber / 4°C		X			

Matrix:

A- Air	PW- Potable Water
AT-Animal Tissue	S- Soil
DL- Drum Liquids	SD- Sediment
DS- Drum Solids	SL- Sludge
GW- Groundwater	SW- Surface Water
O- Oil	TX-TCLP Extract
PR-Product	W- Water
PT-Plant Tissue	X- Other

Special Instructions:

Samples 18464 & 18470 "HOT" (MW-1S)

* sample received broken MS

† the corresponding VOC for MW-2D reads "A, B, C" Semi-VOCs" MS

†† the corresponding 1LT Amber for MW-2D reads "18472A" VOCs (MS)

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #:

Items/Reason	Relinquished by	Date	Received by	Date	Time
All Analysis		12/19/00	MBarkley	12/20/00	11:30
VOC Analysis	MBarkley	12/20/00	[illegible]	12/20/00	1:00 pm

Items/Reason	Relinquished by	Date	Received by	Date	Time

RE/ disol
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EPA Contract 68-C99-223

CHAIN OF CUSTODY RECORD

Project Name: Sam Winer Site, Akron, OH
Project Number: RIA 00177
LM Contact: D. Bussey Phone: 494-4056

No: 19905
Sheet 01 of 01 (Do not copy)
(for addnl. samples use new form)

010501

Sample Identification — **Analyses Requested**

REAC#	Sample No	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	VOCs*	SemiVOCs			
358	18476 A,B,C	MW-1S	GW	1/4/01	3	40 ml glass 4°C	X				
359	18477 A	MW-1S	↓		1	1 LT glass		X			
360	18478 A,B,C	TRIP BLANK	PW		3	40 ml glass	X				
361	18479 A,B,C	MW-2D	GW		3	40 ml glass	X				
362	18480 A	MW-2D	↓		1	1 LT glass		X			
363	18481 A,B,C	Field Blank	PW		3	40 ml glass	X				
364	18482 A	Field Blank	↓		1	1 LT glass		X			
365	18483 A,B,C	MW-3D	GW		3	40 ml glass	X				
366	18484 A	MW-3D			1	1 LT glass		X			
367	18485 A,B,C	MW-4D			3	40 ml glass	X				
368	18486 A	MW-4D			1	1 LT glass		X			
369	18487 A,B,C	MW-1D			3	40 ml glass	X				062
370	18488 A,B,C	MW-1D			3	1 LT glass		X			
371	18489 A,B,C	MW-1D Dup			3	40 ml glass	X				
372	18490 A	MW-1D Dup	↓	↓	1	1 LT glass		X			

Matrix:

A- Air
AT-Animal Tissue
DL- Drum Liquids
DS- Drum Solids
GW- Groundwater
O- Oil
PR-Product
PT-Plant Tissue
PW- Potable Water
S- Soil
SD- Sediment
SL- Sludge
SW- Surface Water
TX-TCLP Extract
W- Water
X- Other

Special Instructions:

Samples 18476 & 18477 "Hi-T" (est. ppm levels).
Samples 18487, 18488, 18489, & 18490 est. low level ppb.
Others samples est. Non-detect.
*- including Acrolein & Cyclohexanone DNB

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #:

010501

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished by	Date	Received by	Date	Time
All Analysis		1/4/01		010501	0930						
7 BNA		010501		010501	1527						

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EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: Sam Wiser Site
Project Number: R1A00177
RFW Contact: D. Bussey Phone: 494-4056

No: 05008

SHEET NO. 1 OF 1

11/22/00 -

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	VOC's	Semi VOC's		
746	18436A,B	mw-1S 4-6'	S	11/20/00	2	40z Glass / 4°C	X	X		
747	18437A,B	mw-1S 12-14'								
748	18438A,B	mw-1S 20-22'								
749	18439A,B	mw-2D 5-7'								
750	18440A,B	mw-2D 20-22'								
751	18441A,B	mw-3D 5-7'		11/21/00						
752	18442A,B	mw-3D 5-7' Dup								
753	18443A	mw-3D 20-22'			1					
754	18444A,B	mw-4D 5-7'			2			X		
755	18445A,B	mw-4D 15-17'			2			X		

063

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions:
Hot samples 18436, 18437
Low ppm Sample 18438
Other Samples should be clean.

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
All/Analysis		11/21/00		11/22/00	10:00	10/ 4°C		11/22/00		11/22/00	16:30
9/BNA		11/21/00		11/22/00	10:35AM						

FORM #4

8/94